India

National Agriculture Situationer

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AGRICULTURE IS THE backbone of the Indian economy, with 65 percent of the population eking out a living either directly or indirectly from it.

In recent years, however, Indian agriculture has found itself in a state of flux and transition.

On the one hand, it is in the process of integration with the global market; on the other, it faces policy constraints and bottlenecks at the domestic front.

Issues of subsidy, mindless exploitation of water resources for commercial agriculture, use of chemicals, and conventional and non-conventional energy figure prominently.

Climate change and frequent droughts and floods have been wreaking havoc of late on the agriculture sector.

On a positive note, productivity improvements brought about by high-yielding crop varieties and a movement towards Sustainable Agriculture have been encouraging.

By and large, the organic agriculture market in the country is unorganized and is confined primarily to the metros like Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad. One of the challenging issues is estimating the area under organic agriculture. Global market trends point to an enormous potential waiting to be tapped.

The National Policy on Agriculture stresses the centrality of the concept of Sustainable Agriculture.

The policy seeks to improve the natural resources of the country and resort to measures to contain biotic pressures on the land.

Proper use of water resources, especially ground water, figures highly among the government's priority tasks.

Integrated Nutrients and Pest Management (INM and IPM) and agro-forestry are expected to become prime thrusts, besides concerted efforts to pool, distill, and evaluate traditional practices, knowledge and wisdom.

Despite showing positive signs, India's organic agricultural market is not growing fast enough to persuade a larger chunk of the farming community to shift to organic farming and practices.

Some of the major stumbling blocks in this regard are poor quality bio-inputs in the market, and lack of proper infrastructure for the distribution and storage of bio-inputs, among others.

Bio-fertilizers are also perceived as less effective and as a result, the farmers are not keen to adopt the new practice.

In addition, changing the cropping pattern is a slow and time-consuming process and, given that majority of Indian farmers are illiterate, quite complicated.

On the flip side, the growing export market, the price premium for organically produced crops, increasing involvement of private companies in the field of agricultural extension and greater government attention, is opening up new vistas in sustainable agriculture.

Situationer

Agriculture has a vital role in the economic development of India as it accounts for 24.2 percent of the country's gross domestic product (GDP), employs 56.7 percent of the country's work force, and accounts for 14.7 percent of total export earnings.

After being a food deficit country for about two decades after independence, India has not only become self-sufficient in food grains but has even attained a surplus. The situation started to improve gradually after the mid 1960s with the

Table 1. **Food Grain Production (*million tons*)**

Crop/Year	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2000-2003	2003-2004
Rice	81.7	82.5	86.1	89.7	85.0	93.3	72.7	86.4
Wheat	69.4	66.4	71.3	76.4	69.7	72.8	65.1	72.7
Coarse Cereals	34.1	30.4	31.3	30.3	31.1	33.4	25.3	36.8
Pulses	14.2	13.0	14.9	13.4	11.1	13.4	11.1	14.9
Food Grains								
Kharif	103.9	101.6	102.9	105.5	102.1	112.1	87.8	110.5
Rabi	95.5	90.7	100.7	104.3	94.7	100.8	86.4	100.3
Total	**199.4**	**192.3**	**203.6**	**209.8**	**196.8**	**212.9**	**174.2**	**210.8**

Source: ***Ministry of Agriculture***

introduction of high yielding varieties of crops and the development of infrastructure for irrigation, input supply, storage and marketing.

The production of various crop commodities has increased substantially over the various plan periods. Food grain production increased to 211.32 MT (million tons) in 2001-02 from 89.36 MT in 1964-65.

Similarly, the production of commercial crops like sugarcane (9,283 million tons), oilseeds (22.4 million tons), and cotton (13.1 million bales) reached record levels in 1995-96.

Table 2. **Food Grain Production During Various Five–Year Plans *(million tons)***

Commodity	IV Plan	V Plan	VI Plan	VII Plan	VIII Plan	IX Plan
Rice	44.05	53.77	58.34	73.57	81.74	91.61
Wheat	21.78	35.51	44.07	49.85	69.35	71.47
Coarse Cereals	28.83	30.44	31.17	34.76	34.10	34.72
Pulses	10.01	12.18	11.96	12.86	14.24	13.52
Total Food Grains	**104.67**	**131.90**	**145.54**	**171.04**	**199.44**	**211.32**

Source: ***Ministry of Agriculture***

Table 3. **Commercial Crop Production *(million tons)***

Crop/Year	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2000-2003	2003-2004
Groundnut	8.6	7.4	9.0	5.3	6.4	7.0	4.4	8.5
Rapeseed/Mustard	6.7	4.7	5.7	5.8	4.2	5.1	3.9	5.9
Soyabean	5.4	6.5	7.1	7.1	5.3	6.0	4.6	7.6
Other Oil Seeds	3.7	2.7	3.0	2.5	2.5	2.6	2.2	3.0
Cotton	14.2	10.9	12.3	11.5	9.5	10.0	8.7	13.5
Jute & Mesta	11.1	11.0	9.8	10.6	10.6	11.7	11.4	11.2
Sugarcane	277.6	279.5	288.7	299.3	296.0	297.2	281.6	244.8

Source: ***Ministry of Agriculture***

Table 4. **Growth Rates of GDP and Agriculture Production *(percent)***

Year	GDP	GDP in Agriculture and Allied Sector	Physical Production of Agriculture
1992–93	5.1	5.8	4.2
1993–94	5.9	4.1	3.8
1994–95	7.3	5.0	5.0
1995–96	7.3	-0.9	-2.7
1996–97	7.8	9.6	9.3
1997–98	4.8	-2.4	-5.9
1998–99	6.5	6.2	7.6
1999–00	6.1	0.3	-0.6
2000–01	4.4	-0.1	-6.3
2001–02	5.8	6.5	7.6
2002–03	4.0	-5.2	-15.6
2003–04	8.1	9.1	19.3

Source: ***Ministry of Agriculture***

Table 5. **Area and Production of Major Horticultural Crops**
(Area: **million hectares,** Production: **million tons)**

Crops	1999–2000		2000–2001		2001–2002		2002–2003	
	Area	Production	Area	Production	Area	Production	Area	Production
Fruits	**3.80**	**45.50**	**3.89**	**43.14**	**4.00**	**43.00**	**4.18**	**47.68**
Apple	0.23	1.05	0.24	1.23	0.24	1.16	0.25	1.47
Banana	0.49	16.81	0.47	14.14	0.47	14.21	0.68	16.82
Citrus	0.53	4.65	0.50	4.40	0.62	4.80	0.60	4.72
Grapes	0.04	1.13	0.05	1.06	0.05	1.21	0.06	1.15
Guava	0.15	1.71	0.15	1.63	0.15	1.72	0.22	1.78
Litchi	0.05	0.43	0.05	0.40	0.06	0.40	0.05	0.44

Table 5. ***/continued***

Crops	1999–2000		2000–2001		2001–2002		2002–2003	
	Area	Production	Area	Production	Area	Production	Area	Production
Mango	1.49	10.50	1.52	10.06	1.58	10.02	1.60	10.78
Papaya	0.06	1.67	0.07	1.79	0.07	2.59	0.08	1.85
Pineapple	0.07	1.02	0.08	1.22	0.08	1.18	0.09	1.31
Sapota	0.06	0.64	0.07	0.74	0.05	0.60	0.07	0.71
Others	63.00	5.89	0.23	6.49	0.63	5.11	0.48	6.65
Vegetable	**5.59**	**90.83**	**6.25**	**94.00**	**6.20**	**88.62**	**7.59**	**97.50**
Brinjal	0.50	8.12	0.47	7.70	0.50	8.35	0.50	7.83
Cabbage	0.26	5.91	0.25	5.51	0.26	5.68	0.28	5.80
Cauliflower	0.25	4.72	0.26	4.69	0.27	4.89	0.28	4.80
Okra	0.35	3.42	0.35	3.34	0.35	3.32	0.37	3.53
Onion	0.49	4.90	0.45	4.72	0.50	5.25	0.53	5.45
Pea	0.27	2.71	0.32	3.01	0.30	2.04	0.35	3.20
Potato	1.34	25.00	1.21	22.44	1.25	24.45	1.37	25.00
Tomato	0.46	7.43	0.46	7.24	0.46	7.46	0.54	7.60
Others	**2.07**	**28.63**	**2.48**	**35.35**	**2.31**	**27.18**	**3.37**	**34.74**
Flowers	0.09	0.52	0.10	0.56	0.11	0.54	0.15	0.70
Spices	2.50	3.02	2.50	3.02	3.22	3.77	–	–
Cashew Nut	0.69	0.52	0.72	0.45	0.74	0.46	0.73	0.47
Areca Nut	0.69	0.52	0.72	0.45	0.74	0.46	0.73	0.47
Coconut	1.77	12.23	1.82	12.68	1.89	12.82	–	–
Other Horticultural Crops	**NA**	**1.75**	**0.11**	**0.15**	**0.12**	**0.17**	**0.13**	**0.19**

Source: ***Ministry of Agriculture***

Table 6. **India's Position in the International Ranking in Production of Various Fruits and Vegetables *(1999)***

Crop	Rank	Crop	Rank
Apple	10	Brinjal	2
Banana	1	Cabbage	2
Mango	1	Cauliflower	1
Papaya	2	Peas	1
Pineapple	4	Onion	2
Grapes	10	Potato	3
Coconut	3	Cashew	1
Total Fruits	**2**	**Total Vegetables**	**2**

Source: ***Indian Horticulture Database, 2001***

India also accounts for 10 percent of global fruit production, second only to Brazil, and is the second largest producer of vegetables after China, contributing 13.4 percent of the world's vegetable production. In fact, the high level of land productivity in many parts of the country can be largely attributed to the growing of high value horticulture crops.

This is due to the support given to the horticulture sector during the Eighth and Ninth plan.

At the same time, output growth in agriculture has leveled off at 2.5 to 3 percent a year since the 1950s. Capital formation in the agriculture sector grew by 6.05 percent between 1989-90 and 1994-95, but its share of total gross capital formation actually declined to 10.85 percent from 18.86 percent in 1980-81 (using 1980-81 prices).

There are region-specific causes for decelerating growth in the agriculture sector during the 1990s. Some of the most notable are:

- Low public investment in irrigation and poor maintenance of existing irrigation facilities.
- Poor maintenance of rural infrastructure, specially canals and roads.
- Decline in investments in rural electrification and in its availability. This has greatly affected the population in eastern India, where huge groundwater potential remains untapped.
- Rising level of subsidies for power, water, fertilizers and food are eating into the public sector investment in agriculture, besides encouraging inefficient use of scarce resources such as water. This further aggravates environmental problems, leading to loss in soil fertility and decline in ground water, which further reduces returns on capital. Farmers then demand further subsidies to maintain the same level of production.

- ❖ Inadequate credit support.
- ❖ Continuing imbalanced use of N, P and K fertilizers (6.69:2.59:1.0 in 2001-02 as against the desirable norm of 4:2:1) and increasing deficiency of micro-nutrients in soil.
- ❖ Stringent controls on movement, marketing, credit, stock and export of agri- products that affect their profitability. In the face of pressure from the WTO, there is an apprehension that without speedy domestic market reforms, attempts to access world markets would actually threaten the future growth of Indian agriculture. The classic case is that of sugar where imports were opened at zero duty when controls on domestic markets remained widespread.
- ❖ Growth in Total Factor Productivity (TFP)[1] appears to be decelerating, suggesting a decline in the use of technology.
- ❖ Demand constraints (slow growth of the urban economy, restrictions on exports, lack of land reforms, failure of poverty alleviation schemes, slow growth in rural wages).
- ❖ Controls on the agro processing industry.
- ❖ Poor extension service.

Several changes have taken place in the agriculture sector in recent years. For instance, the contribution to output growth of area expansion and yield increases has changed significantly in the last 50 years. Between 1950-51 and 1970-71, or before the Green Revolution made such headway, total cropland grew by 30 percent and the index of yield per unit area, by 43 percent.

However, between 1970-71 and 1996-97, the total area planted to crops shrank to just 11 percent while yield growth shot up to 61 percent, reflecting primarily the effects of the Green Revolution.

Secondly, the contribution of the different regions and crops to aggregate growth has also changed.

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[1] Total Factor Productivity (TFP), which is a comprehensive measure of technical progress, has been discouraging. According to the World Bank (WB), India's TFP registered negative growth (-0.59 percent a year) in the first half of the 1990s compared to a healthy 1.39 per cent annual average in the 1980s. The states of Assam, Gujarat, Haryana, Madhya Pradesh, and Rajasthan recorded larger declines in TFP in the first half of the 1990s compared to the 1980s. Maharashtra and Tamil Nadu both registered a decline, while Andhra Pradesh and West Bengal saw positive though slower growth in the latter period. In contrast, the states of Bihar, Karnataka, and Kerala experienced an acceleration in TFP growth. Evidently, productivity growth is the source of increases in factor returns, including returns to labor. It is no surprise then that the slowdown in productivity growth has had an impact on the average rate of growth of real wages in rural areas, which declined from a healthy 3.56 per cent per annum in the 1990s to 0.77 per cent in 1990-93, during which India experienced an agricultural cum macroeconomic crisis (1991-92). Thereafter, though, except in 1994-95, TFP has steadily increased every year.

For example, the eastern states of Assam, Bihar, Orissa and West Bengal performed dramatically better in the 1980s and 1990s than they did in the previous three decades.

Oilseed production doubled in the last decade, while the contribution of *kharif* crops (mainly rice) has declined over the years in relation to annual output.

In 1996-97, the output of *kharif* cereals was 99 million tons compared to the *rabi* output of 86 million tons. Near self-sufficiency has been achieved, though at low levels of consumption, with respect to foodgrains and oilseeds.

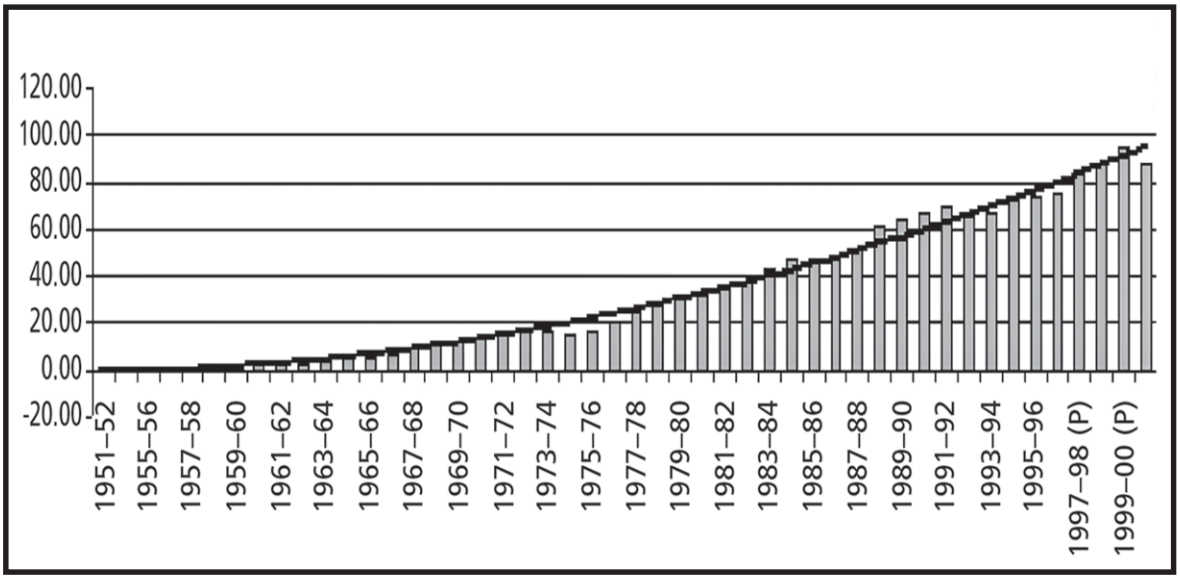
Many of these changes were the result of policies adopted at the time.

Agricultural Inputs: Trends and Challenges

Fertilizers

In the last 50 years, following independence, the use of fertilizers in India has grown nearly 170 times— from 0.55 kg a hectare in 1950 to 90.12 by 2001-02. Fertilizers and pesticides have become a major cost of production in India along with spending on other inputs like seeds and labor (http://www.etagriculture.com/).

Figure 1. **Consumption of Total Plant Nutrient per Hectare of Gross Cropped Area *(1951–1952 to 2000–2001)***

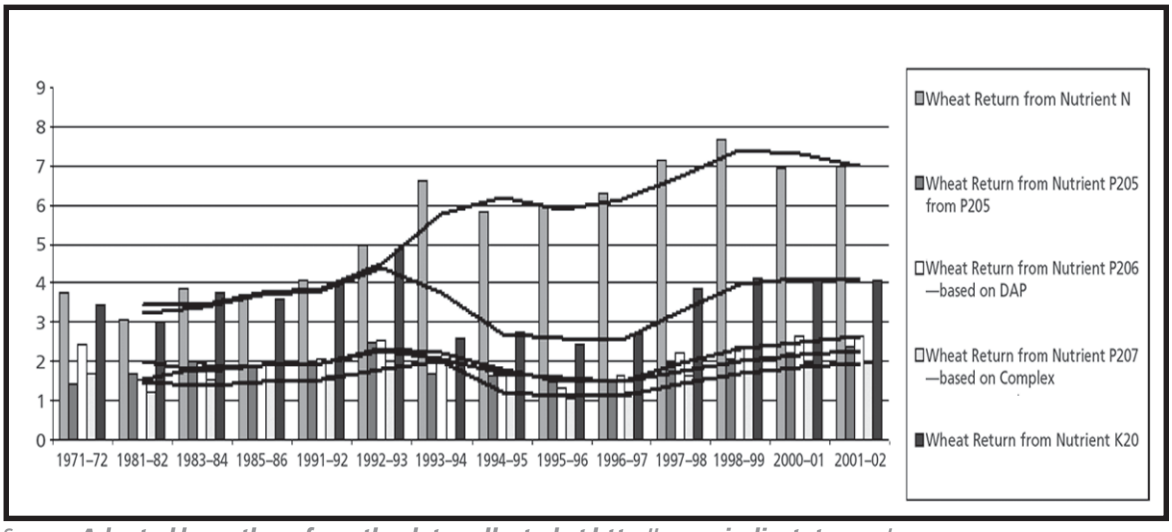


Source: ***Adapted by authors from the data at http://www.indiastat.com/***

Given the differences in the intensity of agriculture and cropping patterns across the country, there are wide variations in fertilizer consumption in India.

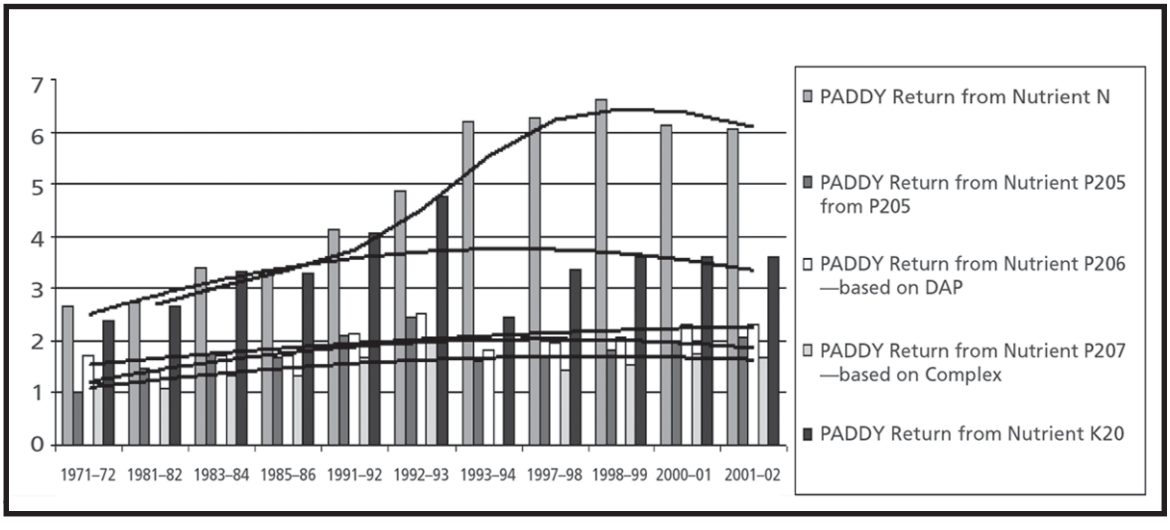
For instance, states like Punjab, Andhra Pradesh, Haryana, Karnataka, Tamilnadu, West Bengal and Uttar Pradesh have very high fertilizer consumption a hectare compared to Rajasthan, Madhya Pradesh, Himachal Pradesh, Orissa, Goa and the Northeastern states. Per hectare fertilizer use in Andhra Pradesh was as high as 179.2 kg in 2000-01, while in many Eastern states, it was less than 10 kg a hectare. Unfortunately, this increase

Figure 2. **Trends in Economics of Fertilizer Input on Wheat Production in India *(1971–2002)***



Source: ***Adapted by authors from the data collected at http://www.indiastats.com/***

Figure 3. **Trends in Economics of Fertilizer Input on Rice Production in India *(1971–2002)***



Source: ***Adapted by authors from the data collected at http://www.indiastats.com/***

in chemical usage has not always translated to increased incomes for farmers *(See Figs. 2 and 3)*.

The marginal income from land from each additional unit of chemical fertilizer and pesticide used is decreasing. This is due to the soil's low fertility (in regard to the N [nitrogen], P [phosphorous] and K [potassium] components). The deficiency of carbon in the soil has also become widespread, especially in the green revolution areas. This scenario makes the use of organic inputs more imperative.

Pesticides

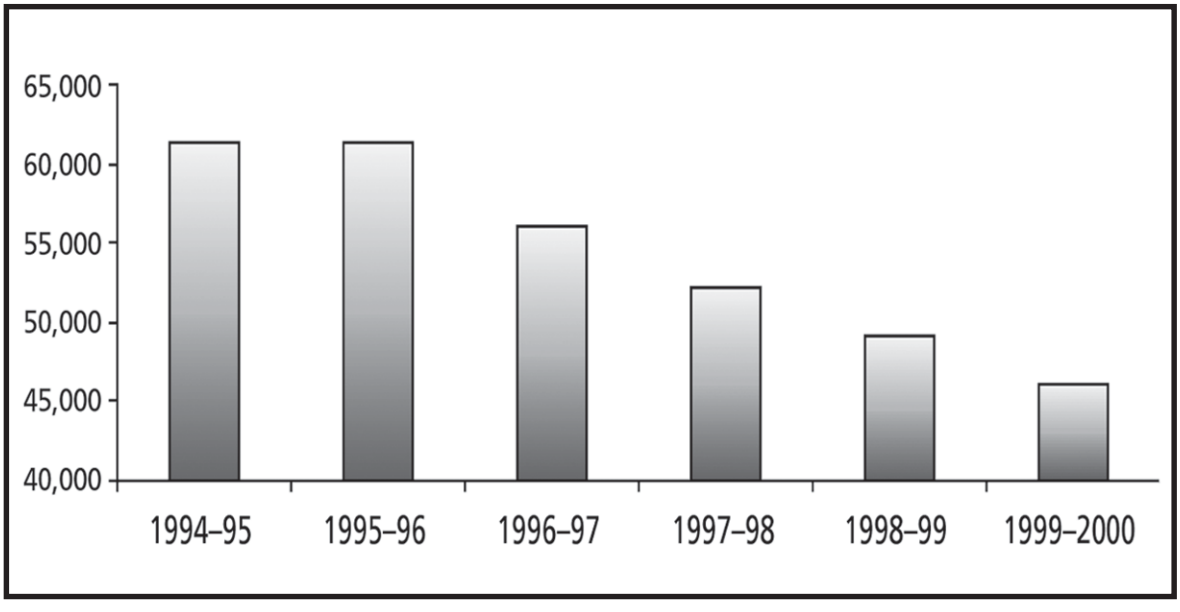
Consumption of insecticides has increased by more than 100 percent from 1971 to 1994-95, or from 22,013 tons to 51,755 tons *(http://www.indiastat.com/)*. Consumption of all kinds of pesticides more than doubled in the same period, from 24,305 tons to 61,357 tons.

Recently, however, there have been some changes in the pattern of pesticide consumption. As a result of adopting bio-intensive Integrated Pest Management (IPM) for various crops, the consumption of chemical pesticides has gone down by 27.69 percent: from 66.36 thousand metric tons in 1994-95 to 43.59 thousand metric tons in 2001-02 *(Thirty-Seventh Report of the Standing Committee on Petroleum and Chemicals, 2002)*.

The pattern of pesticide consumption in India is also very different from that in the rest of the world. In India, insecticides account for 76 percent of the total domestic market while in other countries, herbicides and fungicides have the bigger share of the market. There are likewise regional variations in pesticide consumption within India.

One of the effects of the indiscriminate use of pesticide is the adverse health impact on society in general and on vulnerable sectors like children in particular. Some of the most well-known health-related effects of pesticide exposure in-

Figure 4. **Consumption of Pesticides in India in Tons *(1994–2000)***



Source: ***Indian Chemical Statistics***

clude acute poisoning, cancer, neurological effects and reproductive and developmental harm *(CSE, 1997).*

Irrigation

Agriculture, or more accurately irrigated agriculture, is now considered the largest consumer of water, accounting for as much as 80 percent of total water use in India.

In 1951, irrigation facilities had the potential to service 22.6 million hectares and to produce 50 million tons of food.

Today, due to a four-fold increase in irrigation potential (over 10 million hectares), food production has quadrupled to about 200 million tons. The Ministry of Water Resources estimated the country's ultimate irrigation potential at 139.89 million hectares, with 58.46 million hectares being serviced by major and medium irrigation and 81.43 million hectares by minor irrigation.

The attainment of this ultimate irrigation potential through the construction of major, medium and minor irrigation projects by 2025 is essential to meeting the food requirements of the projected population increase.

With few exceptions, however, all the surface irrigation—conducted through large storage systems—has been used up. The improvement of groundwater resources and streamlining of the prevailing irrigation system are therefore imperative.

After all, the return on investment on operations improvements and modernization of existing systems is still much higher than the return on investments on new projects.

More than 5,000 million tons of topsoil are lost to erosion every year in India. A close look at the present health of the country's soil and water resources reveals their misuse and degraded state.

Indian Agriculture at a Crossroads

Almost 173.64 million hectares, or close to half of the country, are threatened by various types of degradation, such as salinity, alkalinity, waterlogging, desertification, etc.

India's forests and grasslands have also been overexploited. The frequent floods and droughts in different parts of the country is evidence of improper land use in the catchments and inadequate conservation of rainwater.

The problem of land degradation has brought India face-to-face with the rapid depletion of the land's productivity, on the one hand, and the ever-growing demand for food, fodder, fiber, fuel, land-based industrial raw materials, and many non-farm land uses, on the other.

In the meantime, India's population is more than likely to outstrip agricultural production. In 1951, India's population stood at 361 million; in 2000, this figure nearly trebled, to 1004.5 million. Although there are indications of a decline in India's population growth, from 2.14 to 1.70 percent, the country is still likely to add another

420.5 million people by the year 2020, or about 21 million people every year.

The total food grain demand by 2020 is estimated at 294 MT (122 MT rice, 103 MT wheat, 41 MT coarse grains and 28 MT pulses). Thus, by 2020, India will have to produce about 100 MT of additional food grain a year from the same or even less area (some more area will go to meet the increasing needs for roads, rails, buildings, etc.).

Some sectors have suggested that the situation leaves India with little choice but to increase its use of fertilizers. Others argue, however, that biodiversity intensification rather than chemical intensification is the way forward.

Organic Agriculture in India

Market Trends and Potentials of Organic Products in India

Given the unorganized nature of the domestic organic agriculture market in India, it is difficult to estimate the magnitude and trends in this growing market.

In general, the sale of organic produce has been limited to metros like Mumbai, Delhi, Kolkata, Chennai, Bangalore and Hyderabad. To a large extent, this sale is based on the individual initiative of farmers, Non Governmental Organizations and some entrepreneurial traders.

The current demand for domestic green products is mainly for fruits, vegetables, rice and wheat. Other products include tea, coffee and pulses *(ORG-MARG Survey, 2002).*

The market prospects for other commodities like organic spices, fruits, herbal plants and cotton are relatively high. In the next five years, it is projected that demand for organic spices will grow by 14 percent, fruits by eight percent, and herbal plants and cotton by seven percent *(ORG-MARG Survey, 2002).* The market for a range of organic agricultural products as shown in Table 7 is estimated to reach 1,568 tons in 2006-07.

Table 7. **Growth Forecast for Specific Organic Products in the Domestic Market**

Product	% Projected Growth in the Next 5 Years	Product	% Projected Growth in the Next 5 Years
Spices *(all)*	14	Pineapple	5
Pepper	5	Herbal Extracts	7
Turmeric	4.5	Cotton	7
Tea	13	Coffee	5
Rice	10	Oil Seeds	5
Fruits *(all)*	8	Honey	5
Banana	15	Groundnut	5
Mango	5	Baby Food	5
Orange	5	Coconut	5

Source: ***ORG-MARG Survey, 2002***

Area under Organic Farming

There is no official estimate of the area under organic agriculture in India as there is no central agency that collects and compiles this information. However, other agencies have come up with indicative figures.

The study undertaken by FIBL and ORG-MARG *(Garibay S V and Jyoti K, 2003)* puts the area under organic agriculture at 2,775 hectares (0.0015 percent of gross cultivated area in India). The SOEL-Survey estimated the area under organic cropping at 41,000 hectares. The same survey puts the total number of organic farms in the country at 5,661, while the FIBL and ORG-MARG survey puts it at 1,426.

Some of the major organically produced agricultural crops in India include plantation crops, spices, pulses, fruits, vegetables and oil seeds. *(See Table 8).*

Export Potential of Organic Products in India

India is best known as an exporter of organic tea and also has great export potential for many other products, such as spices and fruits.

The current production of organic crops in India is around 14,000 tons *(Garibay S V and Jyoti K, 2003).* Of this, tea and rice contribute around 24 percent each, while fruits and vegetables combined make up 17 percent.

India exports 11,925 tons of organic products, or 85 percent of its total organic crop production.

Table 8. **Major Products Produced in India by Organic Farming**

Type of Product	Products
Commodity	Tea, Coffee, Rice, Wheat
Spices	Cardamom, Black Pepper, White Pepper, Ginger, Turmeric, Vanilla, Tamarind, Clove, Cinnamon, Nutmeg, Mace, Chili
Pulses	Red Gram, Black Gram
Fruits	Mango, Banana, Pineapple, Passion Fruit, Sugarcane, Orange, Cashew Nut, Walnut
Vegetables	Okra, Brinjal, Garlic, Onion, Tomato, Potato
Oil Seeds	Mustard, Sesame, Castor, Sunflower
Others	Cotton, Herbal Extracts

Source: ***Garibay S V and Jyoti K, 2003***

The major export markets for Indian producers are Australia, Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Singapore, South Africa, Saudi Arabia, UAE, UK, and USA.

The volume of Indian exports in 2002 is shown in Table 5. Around 3,000 tons of tea were exported in that year, the highest in terms of volume, followed by rice (2,500 tons), fruits and vegetables (1,800 tons), cotton (1,200 tons), and wheat (1,150 tons) *(Garibay S V and Jyoti K, 2003).*

The burgeoning US and European "green" markets provide enormous scope for Indian exporters.

The International Trade Centre (ITC) reported strong growth in retail sales of organic products in 16 European countries, USA and Japan: from US $ 10 billion in 1997 to US$ 17.5 billion in 2000 and about US$ 21 billion in 2001.

Even if the demand in Japan for "green products" that have not been certified as organic is excluded from the total estimates, worldwide demand would still be significant: US$ 16 billion for 2000 and US$ 19 billion in 2001.

The current market share of organic products in India has been estimated at a mere 1 to 2 percent of the total food products market, but this is expected to grow in the medium-term to five percent *(Minou Yussefi and Heldge Willer, 2003).*

The premium price for various organic products varies from country to country depending on the distribution channels and market conditions.

Generally, however, this premium ranges from 30 to 50 percent (trader level) for different products.

There are immense opportunities for India's organic agricultural exports.

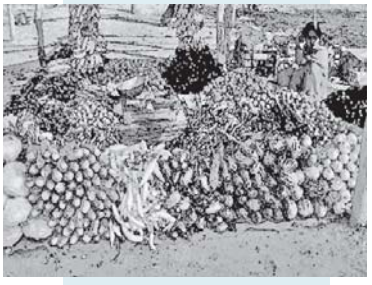


Table 9. **Major Organic Products Exported from India**

Product	Sales *(tons)*
Tea	3,000
Coffee	550
Spices	700
Rice	2,500
Wheat	1,150
Pulses	300
Oil Seeds	100
Fruits & Vegetables	1,800
Cashew Nut	375
Cotton	1,200
Herbal Products	250
Total	**11,925**

Source: ***Org-Marg, 2002***

Some of the prerequisites for exploiting this potential include:

- ❖ Farmers' capacity to produce agricultural products that have global market potential; and
- ❖ Prior experience of exporters and traders in exporting agricultural commodities to these markets.

Fig. 5 provides a matrix of conventional agricultural commodities, which India has been exporting to various countries, and the existence of an organic market for these commodities in those countries. This matrix indicates the capacity of India to export specific agricultural commodities to different countries, as well as opportunities for India's organic agricultural exports.

In developing this matrix, annual exports of agricultural commodities as published in CMIE agricultural sector reports and internet resources for exploring organic market in different countries for different commodities were used.

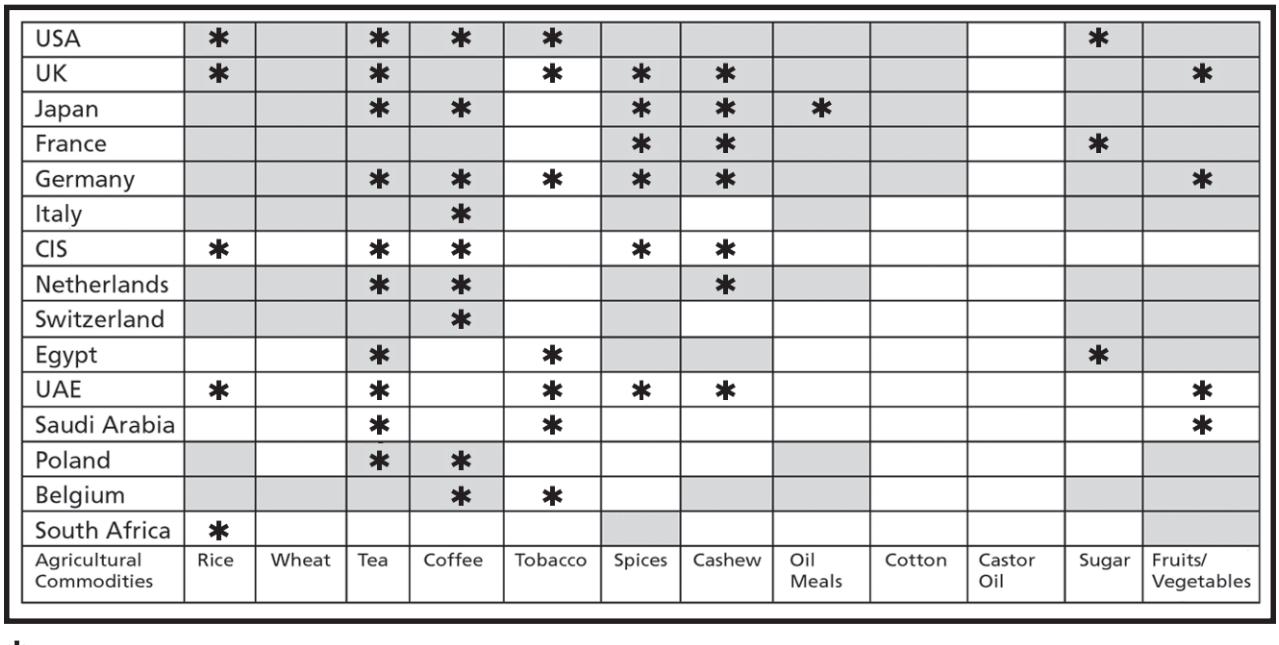
The matrix shows that India has demonstrated capabilities of exporting agricultural commodities like rice, wheat, tea, coffee, spices, oil meals, sugar, fruits and vegetables, etc. to countries like the U.S.,

Table 10. **Percentage of Organic Food and Medium-Term Growth Expected in Selected Markets**

Overview for World Market for Organic Food & Beverages in 2000 *(estimates)*		
Markets	**% of Total Food Sales**	**% Expected Growth *(medium term)***
Germany	1.6–1.8	10–15
U.K.	1.0–2.5	15–20
Italy	0.9–1.1	10–20
France	0.8–1.0	10–15
Switzerland	2.0–2.5	10–15
Denmark	2.5–3.0	10–15
Austria	1.8–2.0	10–15
Netherlands	0.9–1.2	10–20
Sweden	1.0–1.2	15–20
Belgium	0.9–1.1	10–15
U.S.A.	1.5–2.0	20

Source: ***ITC, January 2002***

Figure 5. **Conventional Agricultural Products and their Export Market and Prospective Market for Indian Organic Products**



* *Existing conventional export market for Indian producers for particular product*

Prospective market for Indian organic products

U. K, Germany, Japan, France, Saudi Arabia, South Africa, CIS Countries, Poland, Netherlands, Italy, etc.

It also shows that in most of these countries there is a demand for organically produced commodities, which attract price premiums ranging from 10 to as much as 100 percent. This is a window of opportunity that should be exploited fully by Indian exporters and producers of agricultural commodities.

India's Green Input Market

It is very difficult to estimate the size of the green inputs market in India because of its diversity in terms of products and its unorganized state.

Green inputs into agriculture include bio-fertilizers, bio-pesticides, compost, Farm Yard Manure (FYM), green manure, etc. As most of these inputs are either not traded, or if they were, only informally, available information regarding production capacity, demand and sales is at best a sketchy estimation and hence inadequate.

The green inputs market is currently controlled by the small and local producers of bio-fertilizer, vermi compost and other inputs; only a few well-established firms have a presence here.

It is easier to come up with estimates of the bio-fertilizer market in India because it is more organized than the the green inputs market and because of the presence of some large producers.

Based on the gross cropped area in India (190 million hectares) and recommended doses of bio-fertilizers, potential demand is estimated at 627,000 MT. This demand can be disaggregated according to the different categories of bio-fertilizer, such as Rhizobium, Azotobactors, Azospirillium, BGA, and Phosphate solubilizer, etc., the demand for which differs widely, as shown in Table 11.

Current production and distribution of bio-fertilizers are below target (as seen

Table 11. **Estimated Total Potential Demand for Bio-fertilizers in India**

Category of Bio- fertilizer	Amount in Million Tons
Rhizobium	35,730 MT
Azotobacter	162,610 MT
Azospirillum	77,160 MT
BGA	267,510 MT
Phosphate Solubilizer	275,510 MT
Total	**818,730 MT**

Source: ***Abhay Phadke, 2001***

Table 12. **Installed Production Capacity, Total Production and Distribution of Bio-fertilizers in India *(1992–99)***

Year	Installed Production Capacity *(tons)*	% Growth Rate in Installed Capacity	Total Production *(tons)*	% Growth Rate in Production	Total Consumption/ Distribution *(tons)*	% Growth Rate in Consumption Distribution
1992–93	5,400.5		2,005.0		1,600.01	
1993–94	6,125.5	13.42	3,084.0	53.82	2,914.37	82.15
1994–95	8,114.5	32.47	5,800.5	88.08	4,988.90	71.18
1995–96	10,680.4	31.62	6,692.3	15.37	6,288.32	26.05
1996–97	12,647.0	18.41	7,406.6	10.67	6,681.44	6.25
1997–98	NA	0.00	7,104.6	-4.08	6,295.63	-5.77
1998–99	16,446.0	30.04	8010.1	12.75	6,700.27	6.43

Source: ***The Fertilizer Association of India Bio-fertilizer Statistics, 1999–2000***

in Table 12). For example, in 2000, the proposed production target for bio-fertilizer was 39,165 MT, or just 4.8 percent of total estimated demand for that year *(Abhay Phadke, 2001).* There is obviously a huge gap between potential market demand and production.

Nevertheless, bio-fertilizer production in India is showing a positive trend. From 2,005.0 tons in 1992-93, production rose to 8,010.1 tons in 1998-99. Consumption and distribution of bio-fertilizers has also increased from 1,600.01 tons to 6,700.27 tons during the same period.

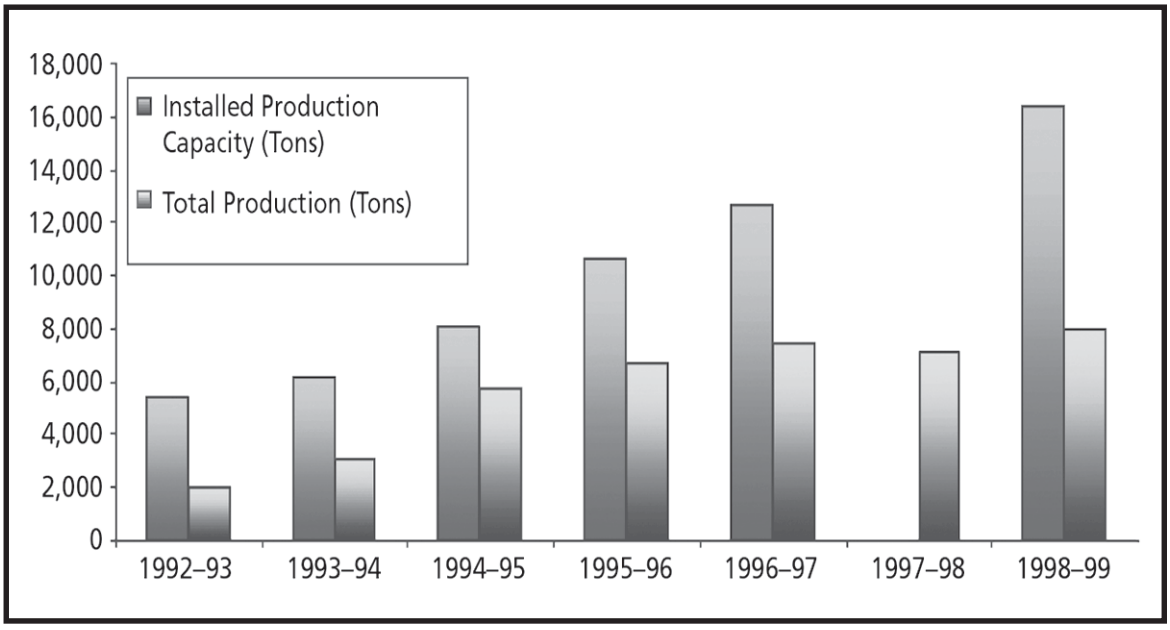
The growth rate of installed bio-fertilizer capacity is comparatively more stable than growth rates of production, consumption and distribution *(Table 12).*

For instance, the growth rate of bio-fertilizer production declined from 53.82 percent in 1993-94 to 12.75 percent in 1998-99; similarly, consumption and distribution went down to 6.43 percent from 82.15 percent in the same period. This shows that there is not only a need but also a role for the development of the green inputs market in India.

In spite of impressive growth of more than 200 percent in production capacity and 300 percent growth in production and consumption of bio-fertilizers in a six-year period (i.e., from 1992-93 to 1998-99), only around 1.5 percent of the estimated demand for bio-fertilizers is expected to be met.

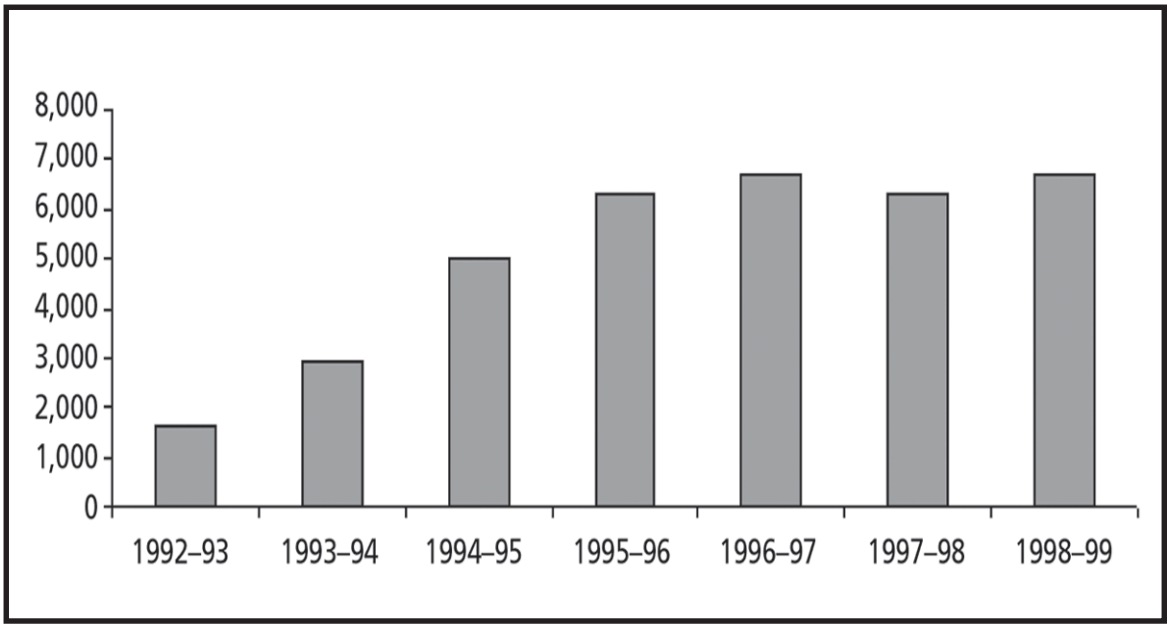
There has been an Increase in the use of vermi-compost in kitchen gardens and even for cultivation of high value cash crops, but information on actual quantities is not available.

Figure 6. **Installed Production Capacity and Total Production of Bio-fertilizers in India *(1992–99)***



Source: ***Adapted by authors from FAI, 2001***

Figure 7. **Total Consumption/ Distribution of Bio-fertilizers in India *(1992–99)***



Source: ***Adapted by authors from FAI, 2001***

Table 13. **Area under Green Manure in India *(1995–97)***

Year	Area in Lakh Hectares
1994–95	35,872
1995–96	34,411
1996–97	22,512

Source: ***FAI, 1999–2000***

The area under green manure is declining in tandem with increasing intensive cropping. Increase in irrigation facilities is also, though indirectly, contributing to the reduction of the area under green manure as seen in Table 13.

Other green inputs for agriculture in India are used in very minimal quantities. Some of the popular bio-pesticides include neem-based formulas and *Bacillus thuringingiensis* (Bt). Consumption of bio-pesticides in India increased from 83 MT (Tech. Grade) in 1994-95 to 686 MT in 1999-2000; in particular, the use of neem-based formulas increased from 40 MT to 71 MT during the same period. *(Thirty-seventh Report Standing Committee on Petroleum & Chemicals, 2002).*

National Policy on Agriculture

The last 55 years of agricultural development in the country can be divided into various phases:

- When the expansion of net sown area (NSA), irrigated area, development of rural infrastructure and land reforms played an important role;
- When the high yielding dwarf varieties, agricultural inputs like fertilizers, pesticides and improved crop production technologies ushered in the green revolution;
- When minimum support prices (MSP) and procurement of agricultural commodities were ensured and the food grain storage and distribution system was expanded at the national level; and
- When the thrust was on liberalization and globalization with the establishment of the World Trade Organization (WTO).

The main factors for the success of agriculture have been: increase in net sown area; expansion of irrigation facilities; land reforms, especially the consolidation of holdings; development and introduction of high yielding seeds, fertilizers, improved implements and farm machines, technology for pest management; a price policy based on Minimum Support Prices (MSPs) and procurement operations; infrastructure for storage; improvements in trade systems; increase in investments, etc.

Agricultural Development Strategy

The Agricultural Development Strategy was revised in 1999 as the national strategy on sustainable agriculture and rural development (SARD). The Strategy is essentially based on the goals of food security and alleviation of hunger.

A regionally differentiated strategy, based on agro-climatic regional planning which takes into account agronomic, climatic and environmental conditions, will be adopted to realize the growth potential of every region in the country.

The thrust of the Strategy is an ecological, sustainable use of basic resources such as land, water, and vegetation that serves the objectives of accelerated growth, employment and alleviation of hunger.

In the accelerated growth scenario for the Ninth Five Year Plan (1997-2002), an agricultural growth rate of 4.5 percent a year was expected. Allied sectors such as horticulture, including fruits and vegetables, fisheries, livestock, and dairy continued to register greater growth during the Ninth Plan period.

In the Ninth Plan, targets were to be achieved through a regionally differentiated strategy based on agronomic, climatic, and environment-friendly conditions.

At the macro level, the agriculture development strategy was differentiated by broad regional characteristics of an agro-economic character.

The Northwestern high productivity regions promoted diversification and high value crops, and strengthened linkages with agro-processing industries and exports.

The Eastern region, with abundant water, exploited this productivity potential through flood control, drainage management, improvement of irrigation facilities, and improved input delivery systems.

The water scarce peninsular region, including Rajasthan, focused on efficient water harvesting and conservation methods and technologies based on a watershed approach and appropriate farming systems. Ecologically fragile regions, including Himalayan and desert areas, concentrated on eco-friendly agriculture.

Animal husbandry and dairying received greater attention for development during the Ninth Five Year Plan as this sector plays an important role in generating employment opportunities for small marginal farmers and landless laborers, especially in rainfed and drought-prone areas.

The growth value of the output from the livestock sector was estimated at 26 percent of the total value from the agricultural sector.

Access to land was a key element of the anti-poverty strategy in rural areas. The program of action for land reform in the Ninth Five Year Plan included the following: detection as well as redistribution of ceiling surplus land; upgrading of land records on a regular basis; tenancy reforms to record the rights of tenants and share croppers; consolidation of holdings; prevention of the alienation of tribal lands; providing access to wastelands and common property resources to the poor on a group basis; leasing-in and leasing-out of land were permitted within the ceiling limits; and preference to women in the distribution of ceiling surplus land

and legal provisions for protecting their rights to land.

Policies Related to Agricultural Development

A. Sustainable Agriculture and Rural Development (SARD)

The major thrust of agricultural development programs in India is improving efficiency in the use of scarce natural resources, namely: land, water and energy.

This can be achieved only through improved productivity in a cost-effective manner.

Balanced and integrated use of fertilizers, agricultural credit, institutional support, accelerated investments in agriculture, enhancing the competitiveness of agro-exports, creation of additional irrigation facilities, etc. have been given encouragement through various schemes and activities of the Government.

1. Rehabilitation of Degraded Land

A wide range of approaches have been employed to address problems of land degradation, some of these include:

- Prevention of soil loss from the catchments.
- Promotion of multi-disciplinary integrated approach to catchment treatment.
- Improvement of land capability and moisture regime in the watersheds.
- Promotion of land use to match land capability.
- Reduction of run-off from the catchments to reduce peak flow into the river system.
- Upgrading of skills in the planning and execution of watershed development programme.
- Increase of productivity of land affected by alkalinity for increasing sustainable agriculture production.
- Identification of critical degraded areas.
- Generation of data on land suitability and capability for regulating land use.
- Preparation of soil resource map and inventory of soil and land resources.
- Development of technical skills in soil and water conservation.
- Building up and strengthening of land capability of State Land Use Boards.

Various soil and water conservation programs have been launched in response to the need to conserve and rehabilitate degraded land, including:

- Strengthening of State Land Use Boards (SLUBS);
- Creation of the National Land Use and Conservation Board (NLCB);

- Setting up of a Soil Conservation Training Centre DVC Hazaribagh;
- Centrally sponsored Scheme of Soil Conservation for Enhancing Productivity of Degraded Lands in the Catchments of River Valley Projects;
- Centrally Sponsored Scheme of Soil Conservation in the Catchments of Flood Prone Rivers;
- Centrally Sponsored Scheme for Reclamation of Alkali (Usar) Soils;
- EFC Assisted Project for Reclamation and Development of Alkali land in Bihar and U.P.;
- Uttar Pradesh Sodic Land Reclamation Project with World Bank assistance;
- Watershed Development Project in shifting Cultivation Areas of North Eastern States (WDPSCA);
- Indo- German Bilateral Project on Watershed Management;
- Reclamation of Marginal and shallow ravines in the states of Uttar Pradesh, Madhya Pradesh, Gujarat and Rajasthan;
- Centrally Sponsored Scheme for Reclamation of Saline Soils including Coastal Saline and Sandy Areas;
- Centrally Sponsored Scheme for Amelioration of Acid Soils.

2. Integrated Pest Management

To alleviate the ill effects of pesticides, India adopted Integrated Pest Management (IPM) as a policy in 1985, and it has been a prominent feature of Five Year Plans since.

In fact, India was the first country in Asia to adopt the policy. One concrete offshoot of this policy is the establishment of the Central IPM Centre (CIPMC), which has a presence in each state. Its tasks include conduct of crop surveys, training of IPM trainors, and rearing natural control agents.

3. Water Resources Management

The projected total water demand by the year 2025 is around 1,050 cubic kilometres against the country's utilizable water resources of 1,132 cubic kilometres.

The share of agriculture in total water demand by the year 2025 is expected to be about 74 to 75 percent. Irrigation, being the major water user, will have to take a lower share by 2025, from the present 83 percent to 74 percent, due to more pressing and competing demands from other sectors.

Water has already become one of the most limited resources in the country. To address the scarcity of water both in quantity and quality, national programs (Preventive & Mitigative Action Plans) have been launched, including:

1. **Setting up guidelines for ground water extraction and use.**

The use of ground water for irrigation as well as industrial and household use has been increasing in the last two decades. Aquifers are at risk of drying up in some parts of the country because of indiscriminate extraction of ground water.

The Central and State Ground Water Boards have, therefore, prepared Ground Water Availability Maps and prescribed extraction rates to ensure that extraction is balanced with replenishment.

The country has been ZONED depending upon whether water is available in plenty, or has already become scarce in the region.

Accurate determination of ground water reserves can be done through actual Bore Hole Data in a given region.

Extraction of ground water is prohibited in some regions where water depletion has already become critical.

2. Management of lakes.

Natural and man-made lakes happen to be a major source of water supply in many regions in India.

Water use efficiency is presently estimated to be only 38 to 40 percent for canal irrigation and about 60 percent for ground water irrigation schemes.

3. Water pricing.

The Committee on Pricing Water (formed in accordance with the National Water Policy, 1987) is charged with rationalizing water rates and has suggested an increase in irrigation water rates in a phased manner.

The pricing of water for various uses will have to take into account the paying capacity of the users, including farmers and large sectors of the population living below the poverty line.

B. De-regulation and Liberalization of Agriculture

Since the start of liberalization, several policy measures have been taken with regard to regulation and control, fiscal policy, exports and imports, taxation, exchange and interest rate control, export promotion and incentives for high priority industries.

Food processing and agro industries have been given high priority and enjoy a number of incentives.

Wide-ranging fiscal policy changes have been introduced progressively. Excise and import duty rates have been reduced substantially. Many processed food items are totally exempt from excise duty.

Custom duty rates have been substantially reduced on plants and equipment, as well as on raw materials and intermediates, especially for export production.

Overall, the rates of protection and deprotection of the sector resulting from agricultural policies have been relatively low; however, there have been substantial variations in the rates of protection across commodities. Non-tariff barriers have had a bigger impact than tariff barriers.

According to the WB, before 1991, or the year of accession to the Agreement on Agriculture (AoA), almost all of India's tradable agricultural commodities were protected by non-tariff barriers.

Exports of most agricultural goods, except traditional exports such as tea, coffee, spices, and jute, were subject to quantitative restrictions (QRs).

In the 1950s and 1960s, export taxes were imposed on traditional exports. Although trade has been greatly liberalized between 1991 and 1995, there have been reversals as well.

Barriers have gone up on more than three-quarters of agricultural commodities, including rice and wheat imports. QRs now apply to exports of most commodities, with the exception of *Basmati* rice and durum wheat.

C. Public Investment in Agriculture

Public sector investment has played a crucial role in the development of infrastructure like irrigation, electricity, agriculture research, roads, markets and communications.

Investment in agriculture declined from 1.6 percent of GDP in 1993-94 to 1.3 percent in 1998-99. This decline was due to a fall in public investment from Rs. 4,467 crores in 1993-94 to Rs. 3,869 crores in 1998-99.

The declining trend in public sector investment will need to be reversed by better targeting of subsidies, increasing investment in productive assets such as irrigation, power, credit and developing rural infrastructure.

On the whole, however, public spending on agriculture as a proportion of GDP has been much higher in India than in other countries.

Despite this, agricultural growth in India has been slower.

The WB (1996) has suggested two reasons for this: (1) that public spending across regions or states is not geared towards a more rapid, broad-based and poverty-alleviating agricultural growth; and (2) that apart from the fact that public spending is disproportionately skewed towards subsidies and against growth-enhancing investments and expenditure on operations and maintenance of existing stock of capital, this skewing also contributes to the poor quality and reliability of the delivery of inputs, such as power and water.

Table 14. **Gross Capital Formation Agriculture (at 1993–94 Prices)** ***(Rs. Crore)***

Year	Gross Capital Formation				Percentage Share of			Investment in Agriculture as Percentage Share of GDP
	Agri–culture	Total Economy	Public Sector in Agri–culture	Private Sector in Agri–culture	Public Sector in Agri–culture	Private Sector in Agri–culture	Agri–culture to Total	
1993–94	13,523	181.133	4,467	9,056	33.0	67.0	7.47	1.6
1994–95	14,969	229,879	4,947	10,022	33.0	67.0	6.51	1.6
1995–96	15,690	284,557	4,849	10,841	30.9	69.1	5.51	1.6
1996–97	16,176	248,631	4,668	11,508	28.9	71.1	6.51	1.5
1997–98	15,942	256,551	3,979	11,963	25.0	75.0	4.77	1.4
1998–99	14,895	243,697	3,869	11,026	26.0	74.0	6.11	1.3
1999–00	16,582	268,374	4,112	12,470	24.8	75.2	6.18	1.3
2000–01	16,545	274,917	4,007	12,538	24.2	75.8	6.02	1.3

Source: ***Central Statistical Organization***

Obviously, the scale and composition of public spending needs to be rethought and restructured.

D. State Support for Agriculture

1. Credit

Agricultural credit is disbursed through a multi-agency network consisting of Commercial Banks (CBs), Regional and Rural Banks (RRBs) and cooperatives.

Cooperative Credit Institutions have emerged over the years as the primary agencies for dispensing rural credit.

Cooperatives have a sizeable presence and play a significant role in meeting the short-term requirements of agriculture.

However, several developments in recent years have saddled the Co-operative Credit Structure (CCS) with severe problems, which have restricted their ability to function viably and perform effectively the task of reaching out to all segments of the farming community and meet their credit requirements in full.

Hence, a proposal to revamp the CCS is being studied by the government.

Table 15. **Flow of Institutional Credit to Agriculture *(Rs. Crore)***

Institutions	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003	2003–2004 *(est.)*
Co-operative Banks	**14,085**	**15,957**	**18,363**	**20,801**	**23,604**	**24,296**	**30,080**
Share (%)	**44**	**43**	**40**	**39**	**38**	**34**	**38**
Short Term	10,895	12,571	14,845	16,583	18,828	20,247	23,920
Medium/Long Term	3,190	3,386	3,518	4,218	4,776	4,049	6,160
Regional Rural Banks	**2,040**	**2,460**	**3,172**	**4,219**	**4,854**	**5,467**	**6,080**
Share (%)	**6**	**7**	**7**	**8**	**8**	**8**	**8**
Short Term	1,396	1,7107	2,423	3,245	3,777	4,156	4,680
Medium/Long Term	644	50	749	974	1,077	1,311	1,400
Commercial Banks	**15,831**	**18,443**	**24,733**	**27,807**	**33,587**	**41,047**	**43,840**
Share (%)	**50**	**50**	**53**	**53**	**54**	**58**	**55**
Short Term	8,349	9,622	11,697	13,486	17,904	21,878	23,400
Medium/Long Term	7,482	8,821					

Source: ***NABARD***

At the same time, the government, through the Reserve Bank of India (RBI), has required private banks to lend 20 percent of their portfolio to the agriculture sector, particularly to small and marginal farmers.

In 1998-99, 18 percent of banks' priority sector lending (fixed at 40 percent of net bank credit) had been earmarked for agriculture.

By March 2001, the outstanding credit to agriculture accounted for 15.7 percent of net bank credit.

In March 2001 compared to 15.8 percent in 2000. Agriculture's share of net bank credit is expected to return to the desired level of 18 percent by the end of 10th plan (2002-2007).

During the Ninth Plan Period, total credit flow and achievement was as follows:

The Kisan Credit Card (KCC) scheme was introduced in 1998-99 to ensure timely, easy and flexible availability of production credit to farmers. Commercial banks, cooperative banks and RRBs are implementing this scheme. Each farmer is provided with a Kisan Credit Card (KCC) and a passbook to revolving cash credit facilities.

The farmer is permitted any number of withdrawals and repayments within a stipulated date, which is fixed on the basis of land holdings, cropping pattern and scale of financing. By June 30,2002, a total of 249.07 lakhs of KCC had been issued.

At the same time, the National Bank for Agriculture and Rural Development (NABARD) is promoting the concept of financing through self-help groups (SHGs). A beginning was made in this direction in 1991-92 by linking self-help groups with formal credit agencies.

Table 16. **Total Credit Flow and Achievements during the Ninth Plan**

Year	Short Term		NABARD Refinance	Investment *(MT/LT)*		NABARD Refinance
	Working Group Projections	Ground Level Credit Flow		Working Group Projections	Ground Level Credit Flow	
1997–98	22,500	20,640	5,270	10,875	11,316	3,305
1998–99	25,650	23,903	5,487	12,995	12,957	3,867
1999–00	29,250	28,862	5,145	15,530	15,750	4,377
2000–01	33,500	34,700		18,608	18,804	
2001–02	38,500	42,735		22,342	24,036	

Source: ***NABARD***

Table 17. **KCCs Issued up to June 30, 2002, by Agency, by Year *('000')***

Year	Cooperative Banks	RRBs	Commercial Banks	Total
1998–99	1.55	0.06	4.45	6.06
1999–00	35.95	1.73	13.66	51.34
2000–01	56.14	6.48	23.9	86.52
2001–02	54.36	8.34	30.71	93.41
2002–03 *(up to 30th June 2002)*	10.99	0.73	NA	11.72
Total	158.99	17.34	72.72	249.05
% Share	**63.84**	**6.96**	**29.20**	**100.00**

Source: ***NABARD***

By March 2000, about 114,775 SHGs had been linked with banks. Meanwhile, the RBI finalized in February 2000 the modalities of bank financing of SHGs and included it in the priority sector lending portfolio.

Under the Tenth Plan (2002-07) an estimated Rs.359,701 crore (US$ equivalent) has been earmarked for production credit, to be distributed through institutional sources, and an additional Rs.376,869 crore for investment credit, for a total Rs.736,570 crore.

2. Agricultural Subsidies

Subsidies have more often than not resulted in the uncontrolled use of ground water resources. In India, the right to ground water rests with the owner of the land. Hence, there is nothing to stop a group of farmers from using up the water on their land.

Subsidies to provide the poor with electricity have been quite taxing on the economy as a whole. Subsidies of this kind are tilted in favor of the input rather than the output, and hence result in less productivity. Hence, efforts should be made in the direction of output-based subsidy whereby the final outcome of the subsidy is more pronounced. The other factor that warrants examination is the distribution of subsidies. Efforts should be made to ensure that subsidies reach those who are poor in real terms rather than the comparatively well-off.

Fertilizer subsidies reflect the high cost borne by the fertilizer industry in India, which consists of plants of various vintages, less than efficient sizes and different technologies using a plethora of feedstock. Some plants are owned by the government and

others by cooperatives and the private sector. The fertilizer pricing committee (1998) pointed out that the present retention-pricing scheme for producers almost guarantees inefficiency. As more income-earning opportunities in agriculture arise, in part due to enabling policies, it is only fair that the income from the agriculture sector be taxed as well.

3. Support Price for Agricultural Products

Minimum support prices for major agricultural products are fixed and announced each year after taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP). The CACP, for its part, makes its recommendations after considering the following factors:

- Cost of Production
- Changes in Input Prices
- Input/Output Price Parity
- Trends in Market Prices
- Inter-crop Price Parity
- Demand and Supply Situation
- Effect on Industrial Cost Structure
- Effect on General Price Level
- Effect on Cost of Living
- International Market Price Situation (MSP)
- Parity between Prices Paid and Prices Received by farmers (Terms of Trade)

4. Farm Insurance

The Comprehensive Crop Insurance Scheme (CCIS) has been operating since 1985. It has thus far been implemented in 19 states and three Union Territories. It is based on an area approach and is linked to short-term credit. To improve the scope and content of the CCIS, a broad based National Agriculture Insurance Scheme (NAIS) or *Rashtriya Krishi Bima Yojana* was introduced in the country in the rabi season of 1999-2000. This scheme is available to all the states and Union Territories and covers food crops, horticultural crops, oilseed crops and commercial crops. All farmers are entitled to such insurance coverage. All yield losses due to natural, non-preventable risks are covered. Premium rates vary from 1.5 percent to 3.5 percent of the sum insured for food grain crops and oil seed crops. Small and marginal farmers are entitled to a premium subsidy of 50 percent, which would be phased out over a five-year period . The General Insurance Corporation (GIC) is the implementing agency.

The National Agriculture Insurance Scheme (NAIS) would be further strengthened during the 10th plan. Its coverage in terms of farmers, crops and risk commitments has been expanded and its premium structure rationalized.

5. Agriculture Extension

The Government is encouraging NGOs to take on a pro-active role in agriculture extension. In fact, the Department of Agriculture and Cooperation, along with NABARD, has already introduced a scheme to establish agri-clinics/ agri-business centers/

ventures to be run by agriculture graduates. The Indian Council of Agricultural Research (ICAR) is also involved in agriculture extension activities through its 314 Krishi Vigyan Kendra (Farm Science Centers), its Institute Village Linkage Programme (IVLP) and also through its institutes/ centers all over the country. It plans to strengthen links between research and extension to improve the quality and effectiveness of the research and extension system. The extension system will be revitalized and made more broad-based through KVKs, NGOs, farmer's organization, Cooperatives, agri-clinics, etc.

Factors Aggravating Unsustainability

Factors Constraining the Greening of Indian Agriculture:

Though the prospects are good for green agriculture in India, it is still not growing fast enough to motivate a larger section of the farming community to opt for organic agriculture.

The major problems hindering the growth of organic agriculture in India are listed as follows:

From producers/distributors/traders' point of view:

- Lack of proper infrastructure for distribution and conservation of bio-inputs is a major constraint that hinders the access of farmers to these inputs.
- Poor quality bio-inputs reduces the credibility of input providers. Lack of quality control mechanisms for bio-inputs reinforces the mistrust among farmers.
- The low penetration of the bio-inputs market and the limited shelf-life of the product are a disincentive to traders to store and sell bio-inputs.

From users' (farmers') point of view:

- Bio-fertilizers and bio-pesticides are perceived as less effective than chemicals.
- Some climatic regions and soil conditions are not suitable for specific strains of organic production.
- The limited shelf life (e.g., 4-6 months) of bio-inputs is another constraint to their adoption.
- Given the time it takes for a conventional farm to become fully organic (i.e., three years), farmers, in general, and small and marginal farmers, in particular, are unable to appreciate the benefits from switching to organic farming given their short-term orientation practice.

From promoters' (Government's) point of view:

- Agricultural departments, research institutions and extension services have for long been oriented towards chemical input agriculture and would therefore need to be reoriented towards organic (green) agriculture.
- Changing the cropping and cultivation patterns is a slow and time-consuming process given the high levels of illiteracy and large number of small and marginal farmers.

- Subsidies on chemical fertilizers and pesticides impede the growth of organic agriculture.

Factors Limiting the Growth of the Organic Products Market

- Lack of market information in general and organic market information in particular is the biggest barrier faced by Indian organic agriculture. The current information base is low and even the limited information available does not get disseminated due to lack of adequate channels for dissemination. As a result, farmers are in a predicament, as they are unable to attune their production practices to market changes. A marketing network specifically for organic products has not yet been developed for both the domestic and export markets.
- The quality of the Indian food industry is always a constraint to growth; inconsistent quality and contamination in food products are hindrances to capturing a big share of the international market.
- The high cost (Rs.22,000 to Rs.29,200 per certification) *(Garibay S V and Jyoti K, 2003),* not to mention the time it takes to get farms certified as organic, and the complexity of the whole process is a major deterrent to the development of organic production in the country, particularly among small farmers.
- Government has shown little interest in organic agriculture, i.e., there is still no direct support from government in terms of subsidy or market support for organic agriculture.
- Lack of proper infrastructure, i.e., farm-to-market roads, cold storage facilities, and transportation, affects the cost, quality and reach of producers.
- Indian organic agriculture is very fragmented; there are no organizations managing the entire value chain of organic products.

Many of the problems listed above are due to the relative newness of this sector from the point of view of the different players.

Sustainable Agriculture Initiatives and Insights

Factors that promote the Greening of Indian Agriculture

Despite constraints, groups still push for organic agriculture because it offers economic opportunities for different stakeholders. Some of the drivers that facilitate the growth of organic agriculture in India are:

- Growing export market for organically grown crops *(Kortbech-Olesen, 2003)*
- Price premium of 10-100 percent for organic agriculture products *(V. Garibay, K. Jyoti, 2003)*
- Diverse agro-climate regions across the country that can support a wide range of crops that cater to different market demands
- Increasing awareness and health consciousness, especially among certain sectors of domestic consumers

- Availability of comparatively cheap labor for labor-intensive organic agriculture
- Huge numbers of small farmers that are engaged in traditional farming and have very limited capacity to pay for chemical inputs for agriculture *(Planning Commission, 2001)*
- Presence of non-government organizations (NGOs) as active promoters of organic farming in different agro-climatic regions *(Donthi N. Reddy, 2001)*
- Increasing involvement of private companies in agricultural extension, trade, consulting and other services
- Greater government attention and support for organic agriculture through various policy initiations and action programs.

Non-Government Organizations have been playing a crucial role in promoting organic agricultural practices in the country. However, changing agricultural practices requires change in the culture and mindset of farmers, which can only be achieved by a long-drawn program. NGOs have demonstrated capabilities to this effect. An example of public-private partnership is the successful story of Spice Board's involvement of NGOs to enhance organic production of spices in Kerala, Tamilnadu, Andhra Pradesh and North Eastern states *(Shenoy, 2003).*

The following measures/initiatives have been recommended to promote Green Agriculture in India:

From traders' point of view:

- Establishment of a unit within the Ministry of Commerce and Trade that is dedicated to providing information on organic agricultural export market potentials in different parts of the world and the price premium that different products command
- Establishment of a Special Organic Agriculture Trade Zone (OATZ) for the domestic and export markets that can help traders get access to farm products, and consumers, to agro- based food processors and retailers
- Tax breaks/ incentives for traders/exporters dealing in organic products.
- Government subsidies and financial assistance for organic food processing industries, as well as the necessary facilities to enhance the prospects of organic exports.

From producers' point of view:

- Popularization of existing schemes to promote the use of bio-fertilizers as well as other bio-inputs
- Assistance in the marketing of bio-inputs, specifically through the government network, and also involving the network of co-operative societies at village level in the distribution of these bio-inputs
- Improvement of infrastructure, like roads, transportation facilities, storage facilities, etc., to enhance the forward and backward links in the organic products supply chain
- Promotion of corporate research on organic agronomic practices, bio- control of diseases and pests, and bio-fertilizers, etc.
- Gradual phasing out of the subsidy for synthetic fertilizers/pesticides and grant of subsidies for promotion of bio-inputs

- Grant assistance in the form of financial assistance in converting traditional into organic farms and support, especially for small and marginal farmers, for certification expenses
- Expansion of the scope of agricultural extension services with a specific focus on organic agriculture through collaborative engagement with NGOs, who are actively working in the rural areas *(Scialabba, Nadia, 2000).*
- A special insurance scheme for organic farmers
- Promotion of contract farming based on organic agriculture as has been done in Madhya Pradesh.

From institutions' point of view:

- The promotion of organic agriculture requires inter-ministerial coordination in the Central Government. Forming a Steering Committee consisting of various ministries at Central Government level (agriculture, commerce and trade, environment, science and technology, finance) would be a move in the right direction.

This committee should help increase the effectiveness of policies and programs directed at promoting organic agriculture.

At state level, some of the institutions that require coordinated action include agriculture universities, state agriculture department, private business organizations, and NGOs.

Each of these institutions can enhance their contribution towards greening Indian agriculture by developing a detailed program of action. For instance, the work program of agriculture universities can include re-orienting their current educational activities, research agenda, and extension service programs, as described in the matrix below:

Education	Research	Agriculture Extension
From:	***From:***	***From:***
❖ Traditional subjects and practices which are mainly focused on high productivity	❖ Research that is focused on increasing productivity through the intensive use of chemical fertilizers and pesticides. ❖ Research focused on development of chemical based methods for controlling plant diseases and pests.	❖ Information dissemination that is focused on conventional land use and cropping practices.
To:	***To:***	***To:***
❖ Incorporation of new subjects and syllabus with focus on sustainable and organic agriculture. ❖ Introduction to environmental impact of agriculture practices.	❖ Research that gives adequate attention to alternative patterns of agriculture with emphasis on environmentally benign and sustainable agriculture.	❖ Global and local market opportunities for organic agriculture produce and the price premium they carry. ❖ Organic agronomic practices, organic control of diseases and pests. ❖ Promotion of the use of bio-fertilizers and bio-pesticides.

Future Directions and Actions: A Perspective

Experience elsewhere shows that government has to play a key role in the development of organic agricultural production and in enhancing marketing opportunities for such products *(Scialabba Nadia, 2000)*.

Towards this end, there is a need for a policy framework to support the greening of agriculture in India.

A favorable policy environment can help create the market conditions that would encourage the production of bio-inputs, which could in turn propel changes in cropping patterns in favor of organic practices.

The attention being given by government to organic agriculture, both in terms of policy

Case Study

In the past 10 years, Institute for Intergrated Rural Development (IIRD) has contributed effectively to promoting organic agriculture through information exchange, awareness raising, standards development, and by increasing the role of women in multi-dimensional functions of agriculture at the local (Paithan Taluka of Maharashtra State), national (India) and regional (Asia) levels.

IIRD's objective is to find alternatives to the current chemical, non-viable and environmentally destructive modes of conventional agriculture, as well as to bring about environmental, socio-economic and cultural stability and sustainability through agriculture.

Objectives and purpose:

- *To find alternatives to the current chemical, non-viable and environmentally destructive modes of conventional agriculture.*
- *To bring about environmental, socio economic and cultural stability and sustainability through agriculture.*

Duration: *From 1987 to present*

The process was initiated by: *Social activists, reformers and women leaders from Maharashtra, India and the chief functionary of the project, Dr. Alexander Daniel.*

Needs addressed:

- *poverty alleviation*
- *food security*
- *environmental sustainability*
- *capacity-building of communities*

to next page

and institutional support, has been marginal. The Ministry of Commerce is mandated to register farmers wishing to convert to organic operations but before farmers can be registered thus, they need technical assistance from the Ministry of Agriculture which is currently unavailable *(Scialabba Nadia, 2000).*

Government needs to be involved not just in standardization and accreditation procedures, but also in giving proactive support to inspection and certification and market-oriented services designed to equalize opportunities among organic producers.

Otherwise, the export of certified organic products risks becoming the monopoly of large farmers, or of highly organized groups of small holders. *(Scialabba Nadia, 2000).*

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Most outstanding outputs:

- *evolution of organic standards for India*
- *networking of initiatives for organic agriculture in Asia*
- *organizing a regional scientific conference*
- *increased awareness of organic agriculture in Paithan Taluka*

Most significant contribution to sustainable agriculture and land use management:

- *establishment of standards for organic production methods and processing in India*
- *exchange of organic farming methodes between different stakeholders in India and Asia through networking programs and conferences*
- *development of market outlets for organic produce to encourage organic production*
- *capacity building of policy-makers, researchers, farmers, processors and certifying bodies in organic agriculture methodologies*
- *establishment of a School for Organic Agriculture*

Extent of impact:

- *organic farmers and processors in India were able to avail themselves of standards for organic production and processing of products*
- *a regional (Asia) scientific conference aimed at sharing organic farming methods was organized in December 1997, in which around 500 participants consisting of scientists, policy-makers, farmers, processors, research and educational institutions and voluntary sectors were able to interact with each other and exchange ideas*
- *an outreach program linking six initiatives of organic agriculture in the Asian region, specifically Nepal, India, Sri Lanka, Japan, China and Philippines, started in March1999*
- *as a result of regular grassroots community education and action programs, organic agriculture has been promoted in 84 villages in Paithan Taluka of Maharashtra State in India*

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Methods used to monitor and evaluate multi-functional impacts:

- *increase in awareness among the different stakeholders of organic agriculture in the region*
- *changes in agricultural policy at local, national and regional levels*
- *increase in demand and expansion of markets for organic produce*

The most import elements (key ingredients) which contributed to success:

- *the need expressed by stakeholders involved in food production and by consumers for alternative, environmentally sound methodologies for food production*
- *present depressing socio-economic situation among farmers due to non-viability of existing resource-intensive methodologies*

Factors that might affect replicability:

- *local environmental conditions*
- *existing agricultural policy*
- *social attitudes and consumer behavior*
- *political situation*
- *trade relations*

Factors that influence sustainability:

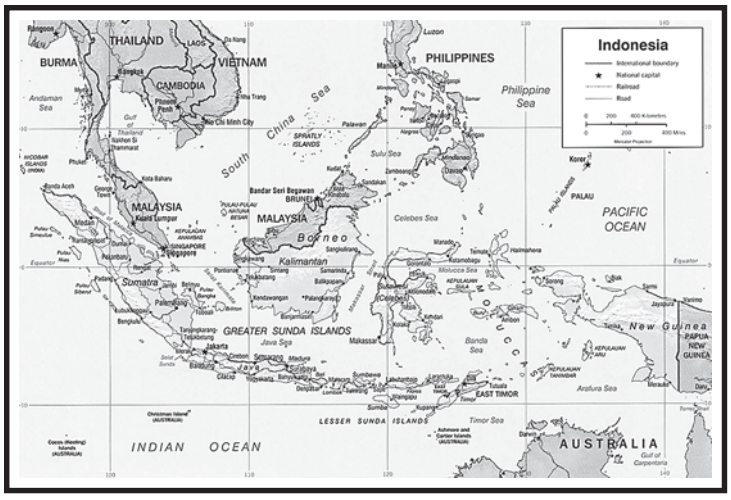
- *ethical behavior of society*
- *proper policy mechanisms*
- *proper inter-linking mechanisms of different roles in agriculture*
- *effective interaction and participative mechanisms*

The most important lessons learned:

- *proper networking was possible at all levels (local, national and regional level)*
- *information exchange was made possible at all levels*
- *social and cultural importance was emphasized*
- *women have to be involved as prime mobilizers in the process of shifting from conventional agriculture to organic agricultural system.*

How this case enhanced the multiple use of agricultural land and water:

- *land use, which was perceived only from the economic context, is now seen as a way to transform social behavior to bring about environmental sustainability. With this change in the thought process, all the components of nature would be effectively and sustainably managed*
- *opening of market outlets for marketing of organic produce*
- *an increased role for women in decision-making in organic agriculture*



Indonesia

National Agriculture Situationer

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Agriculture in Indonesia's Economy

Agriculture's contribution to Indonesia's economy has been declining over the past few decades. From 1965 to 2002, its share of the economy has gone down by 70.2 percent. *(See Table 17)*

Nonetheless, agriculture continues to play an important role in the economy because of its job-creation potential and foreign exchange earnings.

The country's agriculture sector grew briskly from 1978 to1986, with growth rates averaging 5.72 percent a year. From then on, however, until 1997, the sector's performance has progressively declined, primarily because of government policies that prioritized the development of the industrial and service sectors, disregarding the fact that nearly half of Indonesia's population live in rural areas, and 70 percent of them earn their living from agricultural activities.

The 1997 Asian financial crisis, followed by the downfall of the Soeharto regime, further depressed growth in agriculture (1.57 percent), particularly in the animal husbandry sector.

Table 18. **Contribution of Agriculture, Industry and the Service Sector to Indonesia's Economy *(percent)***

Sector	1965	1975	1985	1995	2000
Agriculture	57.1	30.2	22.9	17.1	17.0
Industry	12.5	33.5	35.3	41.8	47.0
Service	31.4	36.3	42.8	41.1	36.0

Source: ***Arifin, 2004***

Table 19. **Growth Rate of Agriculture Sector *(percent/year)***

Description	Consolidation 1967-78	High Growth 1978-1986	Deconstruction 1986-1997	Economy Crisis 1997-2001
Food Crop	3.58	4.95	1.90	1.62
Estate Crop	4.53	5.85	6.23	1.29
Husbandry	2.02	6.99	5.78	-1.92
Fisheries	3.44	5.15	5.36	5.45
Average	**3.39**	**5.72**	**3.38**	**1.57**

Source: ***Arifin, 2004***

The worldwide economic recession and Indonesia's multi-faceted domestic crisis also undermined the performance of agricultural exports – including animal products, food and horticultural plants, and primary plantation crops and their processed products. In 2001, agricultural exports accounted for 4.05 percent of the country's total exports; in 2002, its share rose to 4.47 percent. Thus, in two years, the share of agricultural exports grew by a mere 0.42 percent *(Badan Pusat Statistik).* In the world's agriculture market, Indonesia contributed only 1.39 percent in 2000. This lackluster performance has been the trend in the last few years and persists to this day, in contrast to other Asian countries, such as China, Thailand and the Philippines, where agricultural exports have been increasing.

Table 20. **The Value and Market Share of Agriculture Product World Export in the World During 1998–2000, Several Countries**

Country	Value *(US $ billion)*			Market Share *(%)*	
	1998	1999	2000	1999	2000
World	562,270	545,640	558,280	12.2	9.0
China	14,314	14,209	16,384	16.2	6.6
Thailand	11,523	11,762	13,278	33.8	19.2
Malaysia	9,539	9,214	7,681	25.5	7.8
Indonesia	7,706	7,544	7,764	16.2	12.5
Philippines	2,201	1,771	2,538	20.9	6.4

Note: ***Agriculture product consist of primary and processed product***
Source: ***Forum WTO–Indonesia, 2000***

Table 21. **Export–Import and Trade Balance of Indonesia Agriculture Product During 1997–2001** ***(in US$ thousand)***

Commodity	1997	1998	1999	2000	2001
Food Crop					
Export	110,575	157,185	91,187	59,059	56,363
Import	1,768,871	1,888,011	2,426,336	1,735,697	1,404,472
Deficit	*-1,658,296*	*-1,730,826*	*-2,335,149*	*-1,676,638*	*-1,348,109*
Estate Crop					
Export	5,180,116	4,079,889	4,092,807	3,887,184	3,444,386
Import	1,522,338	1,247,042	1,427,774	1,257,265	1,550,976
Surplus	3,657,778	2,832,847	2,665,033	2,629,919	1,893,410
Horticulture					
Export	140,921	77,678	352,270	298,853	156,788
Import	224,668	113,111	137,219	237,710	464,261
Deficit	*-83,747*	*-35,433*	*215,051*	*61,143*	*-307,473*
Husbandry					
Export	66,947	112,247	118,430	204,076	224,602
Import	626,322	281,197	398,143	634,184	475,882
Deficit	*-559,375*	*-281,197*	*-279,713*	*- 430,108*	*-251,280*

Source: ***Badan Pusat Statistik, 1997–2001***

The development of the world's agricultural produce and its segments from 1998 to 2000 is shown in Table 20.

The data in Table 21 indicates that nearly all agricultural produce recorded a trade deficit, except for the plantation plants subsector which saw a surplus. The balance of plantation product exports and imports in the last five years has consistently shown a decline.

Food crops recorded a deficit from 1999 to 2001, which was attributed to increased imports and decreased food crop production during the period, particularly rice, corn, soybean, sweet potato and green beans.

Horticultural plant commodities experienced a deficit in 1997, 1998 and 2001, and then a surplus in 1999 and 2000. Low

Table 22. **Percentage of State Budget Allocation in Indonesia 2001–2003**

Sector	2001	2002	2003
Industry	3.5	3.5	1.6
Agriculture	7.1	7.1	7.3
Irrigation	7.1	7.1	7.3
Education, Culture, Youth & Sport	22.1	21.6	23.1
Welfare	8.6	9.4	10.1
Defense and Security	5.4	7.5	11.0

Source: ***Badan Pusat Statistik, 2003***

import duties on horticultural products caused a flood of imports in the domestic market.

In the animal husbandry sub-sector, the increase in importation and the consequent trade deficit was due to the inadequacy of domestic supplies to meet demand. On the other hand, the prices of imported raw materials, such as animal feed, continued to rise during the last three years (1998-2001).

Meanwhile, agriculture received only 7.1 to 7.3 percent of the budget in 2001-2003 *(see Table 22),* compared to defense and security, for instance, which accounted in 2002 for 46.7 of the budget.

Macro Policies and Global/National Tendencies Affect Agricultural Sustainability

In an attempt to increase exports and control the importation of agricultural products, the Ministry of Agriculture has phased its targets as follows:

a. Short Term (2003–2004), agricultural commodities that could stabilize Indonesia's economy, meet the basic needs of the general public, increase exports, and protect domestic agriculture.
b. Medium Term (2005–2007), agricultural commodities that could increase agricultural exports and guarantee domestic food security.
c. Long Term (2008–2010), agricultural commodities that could increase the overseas market segments by improving product competitiveness.

In the short term, the Ministry of Agriculture would focus on 15 strategic commodities: ***food crops*** including rice, soybean, corn removed from the cob; ***plantation crops***, including sugar, oil palm, coconut, rubber, coffee, and cashew; ***animal husbandry products,*** including leather skin, chicken, and milk; ***horticulture crops,*** including onions and oranges.

Given the adverse impact of free trade, however, even the short-term targets set by the Ministry of Agriculture might prove unattainable. Data in Table 23 indicates that from 1995-2000, or following the implementation of the Agreement on Agriculture (*AoA*), the volume of most agricultural imports increased sharply, while the volume of exports declined, compared to the period prior to enacting the *AoA*.

To this day, many products of ASEAN countries, particularly Indonesia, are barred entry to developed country markets by Sanitary and Phytosanitary (SPS) standards and Technical Barriers to Trade (TBTs). The SPS standards were written into the WTO agreement and are intended to guard against contaminated agricultural imports. This form of restriction has a significant impact on Indonesia's proposed strategic products, namely rice, soybean and sugarcane.

The implementation of regional autonomy will transfer the responsibility for the management of natural resources from the central government to the regions. As a result, the regions would be able to adapt macro policies to their specific needs and circumstances.

For instance, while setting the price of unhulled paddy is still the prerogative of central government, the regional governments – provincial and district governments – can formulate micro-policies such as establishing a fund to stabilize prices. If prices fall, the regional governments can opt to purchase unhulled paddy at guaranteed prices. The same kind of protection may be extended to other strategic commodities.

Regional governments that choose to intervene should be able to balance the benefits and costs of setting the price of agricultural commodities. At the very least, such action

Table 23. **The Export–Import Value of Food Crop in Indonesia *(in US $ thousand)* During 1984–1994 *(before AoA)* and 1995–2000**

Commodity	1984–1994		1995–2000	
	Import	Export	Import	Export
Rice	648,018	216,010	4,268,200	3,264
Sugar	646,063	613,000	2,311,474	10,169
Soybean	1,579,672	2,201	1,314,782	281
Red Onion	13,989	57	21,786	64
Chicken	6,887	6,955	17,900	12,002
Egg	1,719	2,062	21,672	1,264
Banana	41	10,038	528	66,737
Mango	35	4,854	397	2,847

Source: **FAO**

should not be detrimental to peasant producers.

Fluctuating prices of food products and farm production facilities are quickly reflected at the peasant level. Price changes in the world market translate to relatively bigger price changes in the domestic market.

A. Rice

Table 24 shows that rice consumption from 1998-2002 fluctuated from year to year, and tended to increase. Rice imports grew in the same period following the implementation of the AoA and in the aftermath of the country's economic crisis. After 2001, the volume of rice imports declined, due to higher import duties: from 0percent to Rp. 430/kg (US$ 0.05).

In 2004, the government increased the basic prices of dried, husked paddy from Rp. 1,500 to Rp. 1,725 (US$ 0.18-0.20) a kilogram. Due to the inadequate implementation of price controls, however, dried, husked paddy generally sell for much less at Rp. 900 to Rp. 1,200 (US$ 0.11-0.14).

Siregar, M. *(2001)* cites several factors that work against price controls for paddy, as follows:

1. The recommended price of dried, husked paddy (Rp. 1,500/kg) (US$ 0.18) is considered too high given the current economic condition;
2. There are not enough funds for food procurement, especially after the abolition of KLBI (Liquidity Credit of Bank Indonesia) for Cooperatives and Bulog;
3. Under liberalization, the private sector is free to import rice at 0 percent duty;
4. The Special Market Operation (OPK), which bought rice in greater volumes and at lower prices (200,000 tons/month at Rp. 1,000/kg [US$ 0.12/kg]) affected the demand; and
5. Traders/the private sector doubt government's commitment to maintain the basic price for paddy.

The incongruence of policies related to this crop has also tended to undermine efforts to stabilize paddy prices.

For instance, while the Ministry of Agriculture has raised the basic price of paddy for the benefit of the peasants, the Ministry of Industry and Trade has opened the country to a flood of cheaper-priced imports, sending rice prices on a nosedive.

In August 2000, rice was selling at US$ 169/ton or Rp.1,850/kg in the world market, while domestic rice was priced as high as Rp. 2,450/kg (US$ 0.29/kg). The trend continued in the first quarter of 2001, when world rice prices reached US$ 150/ton, while domestic rice prices averaged Rp. 2,100/kg (US$ 0.25).

B. Soybean

The demand for soybeans increased from 1997 to 2002 by an average of 3.48 percent a year, while soybean production decreased by 8.6 percent a year in the last decade. The demand was fueled by several food processing industries, such as makers of tofu, tempe, ketchup and tauco.

Domestic soybean production has been able to meet only 70 percent of domestic demand. The shortfall has been made up by imports, which are cheaper. Soybean im-

Table 24. **Production, Export and Import of Rice During 1997–2002**

Description	YEAR						Average
	1997	1998	1999	2000	2001	2002	1997–2002
Area *(Ha)*	11,139,426	11,730,372	11,963,000	*11,793,475*	*11,499,997*	*11,568,013*	11,625,254
% up/down		*5.30*	*1.98*	*(1.42)*	*(2.49)*	*0.59*	0.68
Yield *(kwintal/Ha)*	44.32	41.97	42.52	44.01	43.88	43.95	43
% up/down		*(5.30)*	*1.31*	*3.50*	*(0.30)*	*0.16*	(0.16)
Production *(ton)* Husk Paddy	49,373,632	49,236,692	50,866,000	51,898,852	50,460,782	50,838,948	50,367,192
Production *(ton)* Rice	31,105,388	31,019,116	32,045,580	32,696,277	31,790,293	32,028,537	31,780,865
% up/down		*(0.28)*	*3.31*	*2.03*	*(2.77)*	*0.75*	0.46
Import *(ton)* Rice	349,681	2,895,119	4,751,348	1,355,666	644,733	428,474	1,999,309
% up/down		*727.93*	*64.12*	*(71.47)*	*(52.44)*	*(33.54)*	133.63
Export *(ton)* Rice	113	2,001	2,700	1,247	4,010	1,532	2.014
% up/down		*1.670.80*	*34.93*	*(53.81)*	*221.57*	*(61.80)*	374.70

Source: ***Ministry of Agriculture, 1997–2002***

Table 25. **Production, Consumption, Import and Export of Soybean Period 1997–2002**

Description	YEAR						Average
	1997	1998	1999	2000	2001	2002	1997–2002
Area *(Ha)*	1,119,079	1,095,071	1,151,000	824,000	678,848	799,085	973,600
% up/down		*(2.15)*	*5.11*	*(28.41)*	*(17.62)*	*17.71*	(9)
Yield *(kwintal/Ha)*	12.13	11.92	12.02	12.34	12.18	11.64	12.12
% up/down		*(1.73)*	*0.84*	*2.66*	*(1.30)*	*(4.43)*	0
Production *(ton)*	1,356,891	1,304,950	1,382,848	1,017,634	826,932	930,078	1,177,851
% up/down		*(3.83)*	*5.97*	*(26.41)*	*(18.74)*	*12.47*	(8.60)
Import *(ton)*	616,375	343,124	1,301,755	1,277,685	1,136,419	250,803	935,072
% up/down		*(44.33)*	*279.38*	*(1.85)*	*(11.06)*	*(77.93)*	44.43
Export *(ton)*	6	—	5	521	1,188	—	344
% up/down		*NA*	*NA*	*10,320*	*128*	*NA*	NA
Domestic Stock *(ton)*	1,973,260	1,648,074	2,684,598	2,294,798	1,962,163	1,180,881	2,112,579
% up/down		*(16.48)*	*62.89*	*(14.52)*	*(14.50)*	*(39.82)*	3.48

Source: ***Ministry of Agriculture***

ports, encouraged by the 0 percent duty that took effect in 1999, are expected to grow even further, especially following the abolition of the BULOG (Logistics Business Agency) as the country's exclusive soybean importer. An import duty of 27 percent has been proposed by the Ministry of Agriculture to protect local soybean production.

c. Corn

From 1997 to 2002 corn production showed an upward trend, growing by 1.8 percent a year.

Demand also tended to increase in the same period, by 1.17 percent a year, mainly because of increased consumption and rising demand from the corn-processing and animal-feed industries.

The Ministry of Agriculture has proposed a 40 percent import duty on corn in place of the current 0 percent duty.

d. Sugar

Table 27 indicates that sugar consumption exceeded average production from 1997 to 2001. Indonesia had therefore needed to import 1.64 million tons of sugar. Several problems plague the sugar industry in Indonesia, namely:

a. Many of the sugar factories are on Java island, and most of these are idle due to shortage of raw materials.
b. Because of the relatively high (compared to other agricultural imports) 5 percent duty on imported sugar, smuggling has become rampant, making imported sugar cheaper than local sugar.

To cope with the national sugar problem, the productivity of the existing sugar factories should be increased or, as a second option, new sugar factories should be constructed, particularly in outer Java.

In addition, the government has decreed that raw sugar imports can only be brought in for processing and should not be traded or consumed as such. Processed (crystal white) sugar may only be imported by registered sugar importers. The government has also guaranteed the farm gate price of sugar at no lower than Rp. 3,100/kg (US $ 0.36).

AFTA-CEPT (ASEAN Free Trade Area Common Effective Preferential Tariff Scheme)

The ASEAN Free Trade Area (AFTA) refers to the regional agreement whereby tariff and non-tariff barriers to products traded among ASEAN member countries are reduced to 0-5 percent.

The Common Effective Preferential Tariff Scheme (CEFT) is a phased program for tariff reduction and elimination of non-tariff barriers agreed jointly by the ASEAN countries.

Under the AFTA-CEPT, Sadewa *(2003)* forecast that Indonesia will see a mere 0.5 percent improvement in its Gross Domestic Product (GDP), compared to its Asian neighbors.

Table 26. **Production, Consumption, and Import of Corn Period 1997–2002**

Description	YEAR						Average
	1997	1998	1999	2000	2001	2002	1997–2002
Area *(Ha)*	3,355,224	3,847,813	3,456,357	3,500,318	3,286,000	3,306,000	3,489,142
% up/down		*14.68*	*(10.17)*	*1.27*	*(6.12)*	*0.61*	(0.07)
Yield *(kwintal/Ha)*	26.14	26.43	26.63	27.65	28.45	28.89	27
% up/down		*1.11*	*0.76*	*3.83*	*2.89*	*1.55*	1.72
Production *(ton)*	8,711,000	10,169,000	9,204,000	9,677,000	9,347,000	9,550,000	9,421,600
% up/down		*16.74*	*(9.49)*	*5.14*	*(3.41)*	0.02	1.80
Import *(ton)*	1,098,353	313,463	618,060	1,264,575	1,035,797	127,551	866,050
% up/down		*(71.46)*	*97.17*	*104.60*	*(18.09)*	*(87.69)*	22.44
Export *(ton)*	18,957	624,942	90,647	28,066	90,474	6,479	170,617
% up/down		*3,196.63*	*(85.50)*	*(69.04)*	*222.36*	*(92.84)*	652.89
Domestic Stock *(ton)*	9,790,396	9,857,521	9,731,413	10,913,509	10,292,323	9,671,072	10,117,032
% up/down		*0.69*	*(1.28)*	*12.15*	*(5.69)*	*(6.04)*	1.17

Source: ***Ministry of Agriculture***

Table 27. **Production, Consumption, Export and Import of Sugar Cane**

Year	Production (1,000 ton)	Consumption (1,000 ton)	Export (1,000 ton)	Import (1,000 ton)
1997	2.197	3.374	331,28	1.365
1998	1.496	2.739	167,93	1.730
1999	1.496	2.761	179,08	2.187
2000	1.691	3.020	—	1.567
2001	1.725	3.086	—	1.353

Source: ***Badan Pusat Statistik***

For instance, while Thailand has been able to increase its exports to ASEAN markets from US$6 billion to US$16 billion (or 22 percent of its total exports) from1993-2001, Indonesia's exports to ASEAN have grown only slightly (from US$5 billion to US$9.5 billion, or from 13.6 percent to 16.9 percent of total exports) in the same period.

Furthermore, the AFTA-CEPT scheme has been perverted by the rampant practice of using Singapore as a trans-shipment point for imports of non-ASEAN member countries. Products of China and the Middle East, for instance, may by this practice enter Indonesia's market at negligible import duties. Much of the cheap wheat flour that has flooded ASEAN markets in recent years is suspected to have come from China and India, even though it is supposed to have been imported from Singapore-based suppliers.

Indonesia's competitiveness is also undermined by political instability and by frequent labor disputes in the country. Moreover, Indonesia's policy of decentralization, giving the regions autonomy, has resulted in region-specific regulations that capitalists find burdensome.

This lack of competitiveness is evidenced by the low level of Foreign Direct Investment (FDI) in the country compared to its neighbors. This makes Indonesia less likely than other ASEAN countries to benefit from the AFTA-CEPT.

Impact Of Conventional Agriculture

Conventional agriculture, which is characterized by monoculture, high external input application, and species and genetic homogeneity, has impacted negatively on the agricultural and non-agricultural ecosystems.

The impact on the agricultural ecosystem is evidenced by (1) increased land degradation (physical, chemical and biological); (2) increased pesticide residue, and resistance to bacteria and weeds; (3) decreased biodiversity; and (4) negative effects on people's health as a result of environmental toxification.

Beyond the agricultural ecosystem, the impact of conventional agriculture is wit-

nessed in (1) diseases resulting from chemically contaminated food; (2) economic injustice due to monopolistic practices in the procurement of agricultural production facilities; and (3) social imbalance between peasants and non-peasants in the community.

Studies conducted by the Ministry of Agriculture indicate that there has been a real increase in the area of critical land, or land with less than 1 percent organic content. (To be suitable for agriculture, land must have an organic content of at least 2 to 5 percent.)

Between 1990 and 1999, land on Java island and in outer Java that is classified as critical increased from 65 percent to as much as 80 percent.

GMO Products

A genetically modified organism (GMO) that has caused a stir in Indonesia is the Bt cotton produced by PT Monagro Kimia, which is a part of the multinational company Monsanto and operates in South Sulawesi. PT Monagro began research on the Bt cotton in 1996. In 1999, the government pronounced Bt cotton as environmentally safe. In 2001, Bt cotton underwent trial tests on 4,400 hectares. Peasants complained that the Bt cotton caused drought and increased the bacteria population.

Meanwhile, studies conducted by YLKI (Indonesian Consumer Institution Foundation) in 2001-2002 showed that several food products processed from soybeans, corn, and potatoes contained genetically-engineered materials.

Before then, consumers had been unaware that many of their food purchases contained transgenic materials, despite the existence of Law Number 7/1996 on Food, which stipulates that "any food products containing transgenic raw materials shall be inspected in terms of their safety and shall be provided with a transgenic label".

Sustainable Agriculture

These trends support the shift toward sustainable agriculture practices.

Apart from being environmentally friendly, sustainable agriculture is a farming system that is efficient when outputs are compared to inputs.

The development of sustainable agriculture is particularly directed towards (1) reducing the negative impact on the land physically, chemically and biologically; (2) reducing the resistance and persistence of bacteria and shifting the emphasis to biological control; (3) improving the health of the agricultural ecosystem, so as to improve the health of the people and the peasants; (4) reducing the peasants' dependency on inputs in the form of external production facilities; (5) giving peasants' the right to make strategic plans and decisions.

Table 28. **Value of Organic Food Transactions**

Year	Transaction Value
World	
1997	US$ 10 billion
1998	US$ 13 billion
2001	US$ 26 billion
2010 *(projection)*	US$ 100 billion
Indonesia	
2002	Rp 5 billion/month = US $ 5.8 million

Currently, there is growing consumer awareness on the dangers of consuming contaminated agricultural produce, as shown in Table 28.

Indonesia's potential for developing organic agriculture is actually great. Indonesia has approximately 17 million hectares of idle land that can be put to such use. In addition, many peasants still practice traditional agriculture, which should make the adjustment to organic agriculture easier and faster. Crops such as durian, mangosteen, zalacca fruit, lanseh fruit and rambutan, are generally produced without any synthetic material inputs. Likewise, backyard crops such as medicinal plants and several plantation commodities, such as coffee, can be produced without any synthetic inputs either.

The ELSSPAT and BIOCERT (NGOs in Indonesia) estimate that organic agriculture in the country is growing at approximately 10 percent a year, and the growing number of supermarkets, outlets, and other alternative marketing models for selling organic produce in many cities can attest to this.

IFOAM has reported that around 40,000 hectares, or 0.09 percent of the country's agricultural land, are currently being farmed organically, and that Indonesia is ranked 37th worldwide in terms of organic land management.

However, the government itself has yet to come out with definitive data on the extent of organic farming practice in Indonesia.

Government Efforts Related to Organic Agriculture

In connection with the "GO Organic 2010" program, the Ministry of Agriculture has undertaken the following: (1) formulation of the Indonesian National Standard for Organic Food (SNI Number 01-6729-2002); (b) establishment of the Standardization

and Accreditation Center (PSA) as the competent authority on organic food pursuant to Decree of the Minister of Agriculture Number 432/Kpts/OT.130/9/ 2003.

The PSA has the following duties: (1) formulating policy on arrangements for, and control and supervision of the organic food production system; (2) designing and formulating the system and references for the establishment of the organic food certification institution; (c) supervising the certification institution and/or the business board that would implement the quality control system for organic agriculture in the certification program.

In connection with the above mandate, the Organic Food Task Force was established with representatives from: Government, Private Sector, Technical Experts, Drug and Food Supervisory Board (BPOM), National Standardization Board (BSN), National Accreditation Committee (KAN), Universities, Practitioners, Peasants/ Producers and Consumers.

Obstacles to Development of Organic Agriculture

There are several obstacles to the development of organic agriculture in Indonesia, such as (1) lack of consumer confidence in the organic certification system and/or institution; (2) lack of international accreditation for the organic certification; (3) not enough organic inspectors, particularly those who are acknowledged internationally; (4) insufficient awareness/knowledge among peasants of organic agriculture; (5) the long recovery and de-contamination period of land that had long been farmed with chemicals.

Opportunities for Peasant Groups Engaged in Organic Agriculture

There is a big domestic market for organic products. Supermarkets are a particularly lucrative market for organic growers in Indonesia. Unfortunately, peasants have generally been unable to take advantage of this opportunity because the big agribusinesses, especially those dealing in organically grown vegetables, have a corner on this market.

There are other obstacles to access to supermarkets by peasant organizations:

1. **Consumers are still skeptical on whether the organic requirements have been met.**
   - ❖ Organic products grown by peasant groups have not been formally certified as such. Only the big agribusinesses have been able to get organic certification for their products. Second-crop and vegetable peasants have a hard time because their land still contains chemical residues from the previous conventional agricultural practice. It would take three to five years to completely rid the land of such residues. Several peasant groups and NGOs have suggested that rather than the produce, the farming method may be certified as organic.
   - ❖ Irrigation water sources are not yet free from chemical contamination. Hence, peasants in a given area should agree not to use chemicals that could contaminate their common water source.

2. **There is no well-functioning quality control system at the peasant level.**
   In regard to organic rice, peasant organizations can help guarantee uniformity in the quality of their members' produce and that this complies with market demands.

3. **In general, the supermarket practice of delayed payment works against peasants who need to be paid on the spot to meet their household daily needs and to prepare for the next planting season.**

Apart from the difficulty of marketing their products, organic peasants often find that their products fetch prices that are not much higher than those offered for conventional commodities. And ironically, after selling their organic produce, peasants buy cheaper non-organic food for themselves.

There is therefore a need to help peasants realize that the point of organic farming is not merely to get a higher price for their crops, but to improve the fertility of the land, to restore to peasants the right to make farming decisions, to provide healthy food for their families, and to mobilize the spirit to resist the negative impacts of globalization.

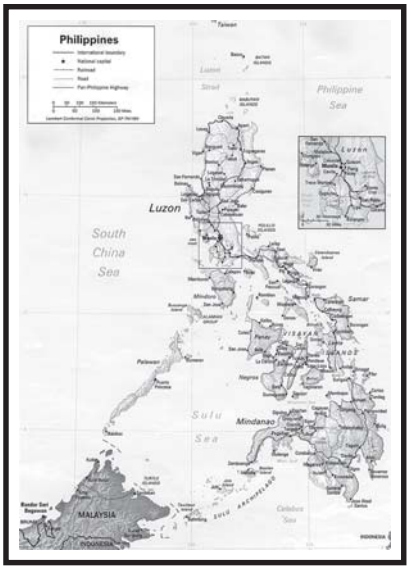
Conclusion

As a result of the government's policy to prioritize the industrial and services sectors, the role and contribution of the agriculture sector has declined, despite the fact that the majority of the Indonesian population depend on agriculture for a living.

This situation is made worse by the country's economic crisis and free trade regulations imposed under the WTO and AFTA regimes which undermine the competitiveness of the country's agricultural products.

Environmental destruction, as evidenced by the increase in critical land, has worsened the condition of the peasants who have to use more fertilizers to maintain their land's productivity. The introduction of GMOs is expected to exacerbate this problem.

There are high hopes that sustainable agriculture would help offset the impact of globalized trade and recover land fertility and preserve the ecosystem. However, the introduction of sustainable agriculture should be followed by a process to help peasants become aware of the long-term benefits of this new farming practice apart from the guarantee of a higher selling prices for their products.



Philippines

National Agriculture Situationer

Prepared by: Fr. Francis B. Lucas and Teresa Lingan–Debuque

Philippine Agriculture in Crisis

Agriculture and agribusiness make up the backbone of the Philippine economy. The country's population is predominantly rural (70 percent of the total) and two-thirds of these depend on farming for their livelihood. Seventy-one percent of the country's Gross Domestic Product (GDP) is produced by agribusiness, while primary agriculture and fisheries turn out some 21 percent. *(Tolentino, 2002)*

Since the early 1980s, however, Philippine agriculture has been in crisis. A number of trends in the sector gives proof of this, in particular, expensive food; stagnant productivity; increasing agri imports and falling agri exports; high production cost; market constraints; monopolies; and weak governance. Despite growth since 1985, the Philippines has been unable to duplicate the peak performance of the 1976-81 period. In fact, the Philippines has fallen out of the group of best performers to join that of the underachievers in agriculture Gross Value Added (GVA) and exports in Southeast Asia.

Stagnant Productivity

Throughout the 1990s, the country's population had grown at an average of 2.35 percent a year. In the meantime, rice production had not kept pace, registering a mere 1.9 percent growth in the same period. Since the 1980s, the productivity of Filipino rice farmers has largely stagnated, growing by only 0.4 percent a year. In contrast, Thai-

land had posted 1.2 percent growth in rice production during the 1990s, and Vietnam an impressive 3.0 percent.

Increasing Agri Imports, Falling Agri Exports

As a percentage of total rice supply, imports have been growing worryingly large in recent years. In 1975-1979 their contribution to the total supply of rice was a miniscule 1.13 percent. This grew to 8.09 percent in 2000-2001. At present, rice imports cost around US$180 a metric ton to US$220 a metric ton. This translates to PhP 10.00 to PhP 12.20 a kilo of imported rice. In contrast, the wholesale price of domestic rice is around PhP 18.21 a kilo. Considering this, rice importation is expected to escalate.

Table 29. **Imports Growing as % of Total Rice Supply***

Rice Imports as % of Total Supply*	
1975–1979	1.13
1980–1989	1.73
1990–1999	7.31
2000–2001	8.09

** Total Supply = prod'n + imports*
Data Source: ***BAS & NFA***

Expensive Food

Expensive rice has implications beyond purely economic ones. For 80 percent of Filipinos, 60 percent of their expenses are on food. The poorest Filipinos spend more: as much as two-thirds of their expenses go to food. Hence, an increase in rice prices has the effect of a wage cut. And it is not just the consumers that are hit hard by such price increases: even rice farmers buy their rice for at least part of the year.

The effect of expensive rice on Filipinos' consumption of the staple was clearly evident in 1997 to1999 when the Philippines registered the lowest rice consumption among nine countries in Southeast Asia.

Table 30. **Per Capita Consumption of Rice***

Country	Rice Consumption *(kilos/ head/ year)*
Bangladesh	161
Cambodia	164
Indonesia	151
Laos	172
Malaysia	90
Myanmar	211
Philippines	98**
Thailand	104
Vietnam	170

** average for 1997–1999*
*** lower than others due to lesser supply and higher price*
Source: ***FAO Agrostat Database***

Table 31. **Costs of Paddy Production *(1999)***

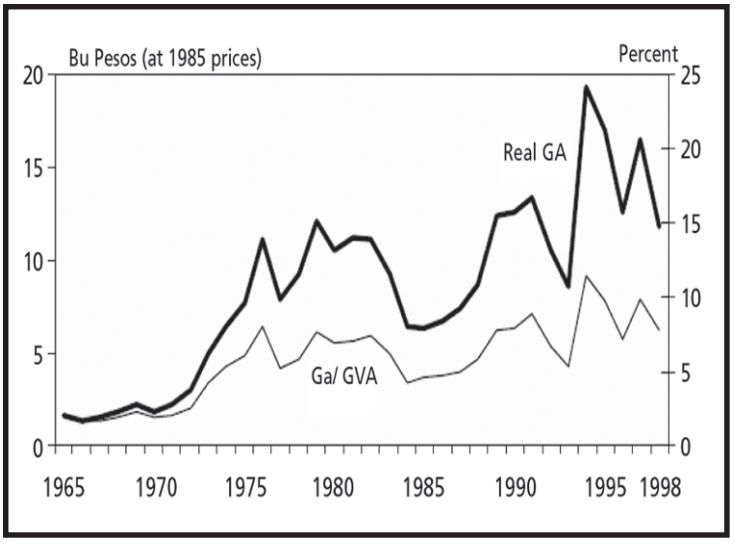
	P/ Ha
Central Luzon, Philippines	34,701
Central Plain, Thailand	24,859
Mekong Delta, Vietnam	26,712
West Java, Indonesia	26,197

Data Source: ***IRRI***

High Production Cost

Of four rice-producing countries surveyed in 1999, the Philippines recorded the highest production cost a hectare of paddy.

Figure 9. **Public Investment in Agriculture *(1965–1998)***



Public Investment in Agriculture

In the 1970s, irrigation and rural infrastructure dominated public investments in agriculture. Much of the investments in the 1980s and 1990s went to price support through the National Food Authority (NFA) and land acquisition payments to Land Bank of the Philippines (LBP) for the Comprehensive Agrarian Reform Program (CARP).

Weak Governance

Current Philippine agricultural governance is characterized by monopoly elements and regulatory constraints. Market constraints combine with stagnant productivity and inadequate public investment to suppress agricultural growth and farmer incomes and inhibit sustainable food security.

Reform efforts are constrained by discontinuity (i.e., the DA head has an average service of 19 months because of frequent leadership changes) and short-term political aspects in decision-making.

Agricultural Policies in Recent Years

After experiencing one of the highest growth rates in the region during the 1970s (4.9 percent average annual growth in Gross Value Added [GVA]), Philippine agricultural growth slowed down considerably in the 1980s (1.0 percent annual growth in GVA), and virtually stagnated during the 1990s (0.4 percent GVA growth).

To a large extent, the decline that started in the 1980s was a direct consequence of the severe financial crisis the country suffered during the Marcos regime's terminal phase. The government stopped building farm-to-market roads, irrigation facilities and other agri-related infrastructure, and became less generous with credit programs directed at farmers and fisher folk.

The shift to democratic governance in 1986 failed to arrest agriculture's decline. To some extent, this was due to the Aquino and Ramos governments' benign neglect of the rural sector.

The Aquino government was simply too preoccupied with the pressing task of keeping itself alive, thwarting one military-backed coup after another.

Rural development took a back seat to satisfying the economic requirements of the military and security establishment, even as the country went through another economic crisis during the early 1990s.

Funds allotted for irrigation, for instance, were not even enough to keep the existing infrastructure from deteriorating.

The Ramos government came up with the "Gintong Ani" program, which focused on providing cheap loans to farmers. Loans were offered to farmers at 25 percent less than the prevailing rates offered by the Land Bank of the Philippines (LBP). However, "Gintong Ani" failed in its avowed mission to revive Philippine agriculture as a prolonged drought caused by El Niño wreaked havoc in the late nineties with agricultural production dropping by more than 10 percent in 1998.

The dry spell coincided with another financial crisis precipitated by the devaluation of the peso. This made it impossible for the government to come up with the massive resources needed to turn the sector around.

President Gloria Arroyo's "Ginintuang Masaganang Ani" (GMA), on the other hand, envisions a modernized and productive agriculture and fisheries sector.

In particular, it aims to promote food security and competitive self-sufficiency in rice through four main measures: (1) modernized productivity in corn and other feed crops; (2) diversification; (3) livestock enterprise development; and (4) recovery and growth of the fisheries sector.

The Medium-Term Philippine Development Plan for 2000-2004 commits the Arroyo government to the pursuit of comprehensive rural development based on three key strat-

egies, namely, productivity improvements, asset distribution reform, and sustainable development.

Raising agricultural productivity entails giving farmers and fisherfolk access to modern agricultural and fishery inputs developed through research and development.

Complementing this strategy are efforts to promote rural industrialization, particularly by putting up viable enterprises, and accelerate the development of infrastructure facilities like irrigation and farm-to-market roads.

Under the strategy for Asset Distribution Reform, the government pledges to continue the land reform process, along with the provision of support services for agrarian reform beneficiaries (ARBs). Meanwhile, as agriculture is being modernized, the government promises to ensure that intensified production activities would not undermine the integrity of the environment. Hence, it espouses policies that promote environment friendly technologies and sustainable farming practices.

Notwithstanding her government's formal declarations, this paper would argue that a number of specific policies and strategies endorsed by the Arroyo administration are advertently or inadvertently undermining its avowed goals. While some of these policies and strategies may have preceded the current government, it has nonetheless done its share to exacerbate their effects on Philippine agriculture.

What Ails Philippine Agriculture?

A Case of Opening Up Too Much, Too Soon

The Magna Carta for Small Farmers prohibits the importation of agricultural products except where there is a shortage and only in volumes that approximate the expected shortfall. This prohibition was intended to protect domestic farm products from cheap, highly subsidized imports.

However, in 1994, the Philippines abandoned this policy when it ratified the General Agreement on Tariffs and Trade (GATT), including the Agreement on Agriculture, which mandates the opening up of the country's market to imports.

Ten years after, the impact of this policy is evident in the following trends in the performance of the country's agriculture sector. Data from the Bureau of Agricultural Trade Statistics (BAS) show that aggregate agricultural imports rose from US$1.3 billion in 1993, a year prior to GATT ratification, to US$2.1 billion in 2001.

In the same period, total agricultural exports declined, from US$1.9 billion to US$1.2 billion. Meanwhile, in contrast to optimistic forecasts by the Department of Agriculture (DA), the country's agricultural trade deficit ballooned by as much as 265 percent in 1996, and by 427 percent in 1997. Gross value added in agriculture (GVA) was virtually at a stand-

still, growing from PhP171 billion in 1995 to a mere PhP183 billion in 1999.

Rural employment in agriculture proved just as disappointing: from 11.14 million in 1993, it dropped to 10.8 million in 2001. It will be recalled that pro-liberalization economists had projected the creation of at least 500,000 new jobs in agriculture every year as a result of increased export trade.

The following section discusses in greater detail the effects of trade liberalization on three sub-sectors of agriculture: rice, livestock and poultry and vegetables and fruits.

Removal of Quantitative Restrictions on Rice Imports and Tariffication of Rice

In compliance with the country's GATT-WTO commitments, the Philippine Congress passed Republic Act (RA) 8178, or the Agriculture Tariffication Act, in 1994. This law, which replaces quantitative restrictions (QRs) on agricultural products with tariffs, went into effect immediately, except in the case of rice, where tariffication was deferred for 10 years.[2]

The 10-year deferment expired in December 2004, after which in lieu of a QR a proposed 100 percent tariff would be slapped on rice imports.

At this tariff level, the price of imported rice would approximate the price of domestically produced rice. As such, the tariff rate would not benefit consumers. Nor would it provide any real protection to local rice farmers because it is still more cost-effective, not-to-mention more convenient, to deal with a single source abroad rather than to build stocks from many small suppliers and farmers.

Farmers groups are protesting the cancellation of the rice QR, saying that tariffs are bound to be progressively scaled down and so offer little in the way of future protection for local producers. In fact, there are already talks within the DA of slashing the proposed tariff rate by half. At this level, tariffs would provide virtually no protection to local producers: at PhP 11.00–PhP 12.00 a kilo the maximum landed value of imported rice would still be lower than the selling price of domestically produced rice (PhP 14.00 a kilo).

The country's inability to compete on price is not the only argument presented by farmers groups against rice tariffication.

Just as importantly, the decision to import, including the volume of rice to be sourced from abroad, would henceforth be triggered mainly by price differentials in the market rather than by projected shortfalls in production.

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2 Annex 5 of the WTO Agreement allows a member country to suspend the tariffication of QRs of a politically sensitive staple food.

Traders would be free to import whatever volume suited them, based on their reading of price signals, and regardless of the availability of local supply.

Needless to say, this situation would undermine the economic viability of rice producers and would have knock-on effects on the agriculture sector in general.

Rice is still the Philippines' most important agricultural product. Palay production alone accounts for 19 percent of the country's total agricultural output and 2.9 percent of the Gross Domestic Product (GDP). Around two million farmers are directly employed by this sub-sector. Hence, any policy that undermines the rice industry poses a threat to a significant and major component of the country's agriculture sector.

The Beleaguered Livestock and Poultry Industries

The livestock sub-sector is one of the largest in Philippine agriculture, accounting for as much as 14 percent of agricultural production. In 1999, it contributed just over PhP 68 billion in GVA. Production in the sub-sector was valued at PhP94 billion in the same year *(BAS, 2000)*.

Table 32. **Hog Inventory *(1990–2001)***
(in thousand heads, January 1 of each year)

Year	Backyard	Commercial	Total
1990	6,776	1,224	8,000
1991	6,621	1,458	8,079
1992	6,717	1,305	8,022
1993	6,663	1,290	7,953
1994	6,766	1,460	8,226
1995	7,181	1,760	8,941
1996	7,239	1,787	9,026
1997	7,788	1,964	9,752
1998	8,031	2,180	10,211
1999	8,179	2,218	10,397
2000	8,327	2,383	10,710
2001 (p)	8,542	2,521	11,063

p — preliminary
Source: ***Bureau of Agricultural Statistics***

Table 33. **Growth Rates in Livestock and Poultry *(percent)***

	1996	1997	1998	1999	2000
Livestock	6.60	5.34	3.37	4.50	3.07
Poultry	11.27	6.84	0.64	0.96	5.39

Data from: ***BAS***

Hogs make up about three-quarters of Philippine livestock production and accounted for PhP 74.7 billion of the value of production in 1999.

The poultry sub-sector accounts for another 14 percent of agricultural production. It contributed around PhP41 billion in GVA in 1999. The value of poultry production in that year was PhP 66 billion at 2000 prices, with chicken accounting for PhP 49.7 billion, or about 75 percent. *(BAS, 2000)*

However, since the country ratified the GATT in 1994, imports of cheap meat and meat products have risen steadily, amid howls of protest from local livestock and poultry producers.

Indeed, data from the Bureau of Agricultural Statistics (BAS) reveals that growth has slowed in both sub-sectors in recent years.

Growth in the livestock sub-sector took a nose-dive following trade liberalization: from 6.60 percent in 1996 to 3.07 percent in 2000. The poultry sub-sector in particular endured similar reverses: growth was almost halved to 5.39 percent in 2000 after first plummeting to 0.64 in 1998 *(See Table 31).*

In the four years prior to the country's accession to the WTO, (i.e., from 1990 to 1994), hog imports grew at no more than - 7.0 percent on average. Right after accession, or between 1995 and 2000, this shot up to a dizzying 134percent. In particular, carcass imports increased from just 38 tons in 1997 to 533 tons in 2000 *(See Table 32)*.

Pork imports went up further in later years, following the lifting of import restrictions. In 2001, the tariff on pork products was 30 percent at in-quota volume and 60 percent at out-quota volume,,down from 30 percent and 100 percent, respectively, in 1995. In 2004, tariffs are expected to converge at 30 percent.

Likewise, frozen chicken imports skyrocketed after the lifting of quantitative restrictions: from less than a thousand tons in 1995 to 15,000 tons in 2001.

In 1999, imports peaked at 29,000 tons due to the massive entry of imported leg quarters from the United States *(See Table 33).*

Based on current figures, chicken imports account for 3 percent of domestic demand. However, this estimate is likely to be understated as it takes account only whole chicken imports. Chicken parts, especially leg quarters, sell for just a fraction of the cost of a whole chicken because these are not prized as highly in the U.S. market as

Table 34. **Pork Importation *(1991–2002, MT/$)***

Year	Carcass		Processed		Offals		Total	
	Vol.(MT)	Val.($)	Vol.(MT)	Val.($)	Vol.(MT)	Val.($)	Vol.(MT)	Val.($)
Total	**66,036**	**76,222,790**	**34,901**	**49,595,910**	**100,937**	**124,818,700**	**201,874**	**250,637,400**
1991	462	386,578	4	27,625	466	414,203	932	828,406
1992	417	356,275	140	30,456	557	386,731	1,114	773,462
1993	39	22,185	27	43,897	66	66,082	132	132,164
1994	238	216,229	94	320,861	332	537,090	664	1,074,180
1995	693	693,114	60	300,426	753	993,540	1,506	1,987,080
1996	4,285	6,724,723	834	1,271,260	5,119	7,995,983	10,238	15,991,966
1997	7,037	13,372,833	3,976	6,804,474	11,013	19,177,307	22,026	39,354,614
1998	6,904	8,215,629	3,614	6,107,509	10,518	14,323,138	21,036	28,646,276
1999	18,122	19,314,560	8,735	12,827,993	26,857	32,142,553	53,714	64,285,106
2000	15,785	15,773,591	5,830	5,771,108	21,615	21,544,699	43,230	43,089,398
2001	9,822	9,090,471	8,250	11,349,088	18,072	20,439,559	36,144	40,879,118
2002*	2,232	2,056,602	3,337	4,741,213	5,569	6,797,815	11,138	13,595,630

**** as of April 2002***
Source: ***Bureau of Agricultural Statistics***

chicken breast. Hence, imports of chicken parts land in the Philippines, tariffs included, at a bargain.

Competitiveness is a major issue for the country's local producers. Local hog production, for example is not competitive with imports. One of the main reasons for this is that the local feed conversion ratio (FCR), or the amount of feeds needed to produce a kilo of live hog, is higher than that of foreign hog raisers.

The local FCR is at 3.6 kg. or more, while foreign hog raisers have maintained their FCR at 3 kg. The 600 gram difference is equivalent to about 54 kg of additional feed per hog. Furthermore, the average litter size is also lower than in the advanced countries.

Another serious problem is that the cost of corn, the main component in livestock and poultry feeds, is relatively expensive and often scarce in major production areas. The prices of other feed components, such as soya and wheat, are also on the rise.

In the case of chicken, corn comprises 70 percent of feed cost which in turn comprises 60 percent of the cost of chicken. There is also a dearth of quality slaughterhouses, storage, and transport facilities, which can reduce costs and are necessary for the growth of the industry.

The Unhealthy State of the Vegetable and Fruit Industries

Following the cancellation of import restrictions, the Philippines pegged the tariffs at 40 percent. However, the actual applied rate for most vegetables (except cabbage and onion) is much lower (7 percent). This is by virtue of Executive Order No. 164, which was issued by President Gloria Macapagal-Arroyo in January 2003.

This has resulted in the entry of cheap vegetable imports which now threaten to supplant the entire vegetable market in the Philippines.

Resolution No. 570 of the House of Representatives (12th Congress, 14 January 2003) expressed concern that "the removal of quantitative restrictions and the more than halving of average nominal tariffs in the

Table 35. **Frozen Chicken Importation *(1990–2001)***

Year	Volume*(tons)*	Value*(US$'000CIF)*	Volume Growth*(%)*	Value Growth*(%)*
1990	184	700		
1991	30	90	(83.9)	(87.1)
1992	8	27	(73.5)	(70.0)
1993	106	398	1,255.9	1,366.6
1994	198	1,367	86.5	243.6
1995	181	1,532	(8.4)	12.0
1996	199	405	9.9	(73.5)
1997	962	1,257	384.0	210.2
1998	2,417	2,738	151.1	117.8
1999	29,316	23,121	1,112.9	744.5
2000	16,529	19,748	(43.6)	(14.6)
2001	10,830	7,595	(34.5)	(61.5)

Note: ***2000 imports were highly understated. The USDA figures estimated about 24,000 tons.***
Source: ***National Statistics Office***

sector especially since the mid-1990s. . . has caused imported vegetables to flood the domestic market with an almost three-fold increase from 42,000 metric tons (MT) in 1995 to 115,000 MT in 2000, not even counting thousands of metric tons which were smuggled into the country as a result of the more liberal import policies."

Farmers in Benguet province, the country's prime vegetable production area, as well as in other parts of the country have sustained huge losses as a result. For instance, Benguet Governor Raul Molintas reported that vegetable importation is costing farmers, booth holders and traders some PhP 3.5 million a month in La Trinidad alone. Other reports have estimated the loss in income due to vegetable smuggling at an average of PhP 25 million a week.

At the current rate of importation,, the local industry is forecast to lose more than a billion pesos a year and thousands of farmers' families in Benguet and Mt. Province, Pangasinan and other vegetable-producing provinces in the country would be displaced.

Government Capitulation

Like the now discredited structural adjustment programmes (SAPs) imposed by the IMF and the World Bank on debtor countries, the WTO Agreement on Agriculture is forcing the pace of liberalization of agricultural trade in a manner that erodes the right of governments and communities to determine the appropriate balance between liberalization and protectionism. Such "liberalization under pressure" has not only adversely affected the development of Philippine agriculture sub-sectors in the short- to medium-term, but threatens their very survival along with the small farmers that depend on them for their livelihood.

At the Asia-Pacific Economic Summit (APEC) Summit in Mexico last October 2002, President Arroyo decried the unfair trade rules of the WTO. Following the collapse of talks at the WTO Ministerial Meeting in Cancun in September 2003, both the Department of Agriculture and the Department of Trade and Industry announced that the Philippine government would oppose any further opening up of the country's markets.

When it came down to it, however, the Arroyo government could not be counted on to put its money where its mouth was.

On January 9, 2004, President Arroyo signed Executive Order 268, which reduces tariff rates on all agricultural and industrial products under the ASEAN Free Trade (AFTA) Common Effective Preferential Tariff (CEPT) Scheme. Farmer groups complained that even among its ASEAN partners, the Philippines is ill-prepared for competition. For example, the country's sugar yield of 4.93 MT trails both Indonesia's and Thailand's at 5.76 and 6.71 MT, respectively. They added that by going full-blast in opening the country's markets via regional agreements like the AFTA-CEPT, the Philippines is squandering the gains it had made in Cancun.

Another example of the Arroyo government's flip-flopping on agricultural trade liberalization is its declared intention, on the one hand, to negotiate for an extension of the country's rice QR, and the announcement by its top agriculture trade negotiator, Assistant Secretary for Policy and Planning

Segfredo Serrano, that the government is considering the inclusion of rice in a proposed Special Products (SP) list in the WTO. This could seriously weaken the country's bargaining position because it sends the signal that the Philippines might be persuaded to give up its QR in exchange for the protection offered under an SP mechanism. SPs do not provide the same level of protection as QRs because they do not give government the flexibility to stop importation altogether where the supply is enough to meet local demand.

Vacillating on Asset Reform

President Arroyo has singled out asset reform as her administration's main economic development strategy and pledged to complete land distribution by 2008. However, her government's recent actions and policies fell short of its rhetoric.

In March 2004, for instance, the government came under fire when it became known that it had not made any budget allocations for agrarian reform implementation. Apparently, it intended to take the entire budget for CARP out of the Agrarian Reform Fund (ARF), which is intended to fast-track the land acquisition and distribution (LAD) process and which includes the recovered PhP38 billion ill-gotten wealth of the Marcoses.

By law, 70 percent of the ARF should go towards LAD, while 30 percent should be devoted to support services delivery.

The ARF is not meant to pay the salaries of DAR personnel or to be used for any other purpose. Unless the government stops raiding the ARF and restores the mandatory allocations for CARP, it will virtually ensure the failure of its land redistribution efforts.

Another indication of the government's less-than-steadfast commitment to the agrarian reform effort is the recent request (July 2004) by the DAR, through its OIC-Secretary Jose Mari Ponce, to postpone the installation of ARBs by as much as two years. Sec. 24 (Award to Beneficiaries) of Republic Act 6657 or the Comprehensive Agrarian Reform Law provides that the rights and responsibilities of the beneficiary shall commence from the time the DAR makes an award to her/him, and the award should be completed within 180 days from the time the DAR takes possession of the land. The request for a two-year extension is not only illegal but, if allowed, would give landlords more opportunity to obstruct the already flawed process of land distribution.

The Farmland as Collateral Bill (Senate Bill No. 2553) seeks to collateralize the Certificate of Landownership Award (CLOA) and emancipation patents (EPs) for the avowed purpose of providing access to credit to ARBs. President Arroyo included the passage of such a law among her administration's Specific Anti-Poverty Measures for this ostensible reason. However, this bill also seeks to lift the CARL's five-hectare retention limit (Sec. 6) and the 10-year prohibition on the transfer (*i.e.,* sale, mortgage, transfer, usufruct) of CARP lands (Sec. 27).

In effect, any person may buy or reacquire lands that have been redistributed by virtue of CARP. Farmers groups anticipate that the bill, if enacted, would lead to massive foreclosures of EPs and CLOAs and the

reconsolidation of agricultural lands in the hands of a few.

That President Arroyo is especially keen to see this bill pass casts serious doubt on the depth of her commitment to asset reform.

Modernizing Agriculture to Extinction

Like other governments in Southeast Asia, the government of President Arroyo is preoccupied with enhancing agricultural productivity, especially of rice. To meet the demand for this staple food in the next few decades, experts have estimated that the yield ceiling of irrigated rice will need to increase from its late 1980s level of about 10 tons a hectare to around 13 tons a hectare, while average yields will need to reach about 6 tons a hectare, nearly twice the current level. And this will have to be achieved using less land, less water, less labor, and fewer chemical inputs, particularly pesticides.

Green Revolution technologies are now considered "almost exhausted" of any further productivity gains. In fact, yearly production increases have slipped to around 1.25 percent since 1990.

Productivity declines are especially noticeable in an increasing number of favorable rice-growing areas due to long-term degradation of the paddy resource base.

Even experimental plots at the International Rice Research Institute (IRRI) are giving significantly lower yields today than in the early 1970s.

Furthermore, soil salinization, waterlogging and other degradation associated with intensive rice cropping will lead to a net drop in Asia's total irrigated area.

Land suitable for further expansion of rice is also disappearing, due in part to water and wind erosion and chemical and physical abuse. The quantity and quality of water available for rice growing is also expected to decline.

As a result, rice farmers face declining profit margins. Since the beginning of the 1990s, a stagnant yield frontier and diminishing returns to further intensification have pushed up production costs.

Other changes in factor markets—rapid withdrawal of labor from the farming sector, diversion of land for other agricultural and non-agricultural purposes, increased competition for water, and withdrawal of input subsidies—are driving up input prices and will only intensify in future.

Unfortunately, the failure of Green Revolution technologies to live up to their promise of eliminating food shortages, not to mention their social and environmental cost, have not disabused governments in the region of their preference for high-tech solutions. This time they have latched on "hybrid rice" or "super rice" developed in China, whose yields are touted to be 20 percent higher than those of conventional High-Yielding Varieties (HYVs).

The Philippines' Department of Agriculture (DA) had targeted to increase hybrid rice production to 200,000 hectares by the end of 2003. However, as it turned out, not even

half this area is currently planted with hybrid rice. The poor uptake was attributed to a shortage of hybrid rice seed.

Consequently, the Bureau of Plant Industry (BPI) is thinking of adopting varieties developed by Syngenta, the Swiss multinational agribusiness giant that is attempting to establish monopoly control of the rice crop.

Syngenta has sequenced more than 99.5 percent of the rice genome, beating Monsanto to the punch. It thereafter declared that it would restrict access to the genome map and expects proprietary control over any research carried out using this information. While the company said that it would not seek to patent the entire genome, it admitted it would try to get patents on individual genes. The implications of Syngenta's current and potential claims on rice genes are so far-reaching that critics have jokingly suggested that rice should henceforth be called Oryza Syngenta.

Equally worrying is the precedent set by the DA, when it approved in December 2002 the commercial propagation of Monsanto's Bacillus thuringensis (Bt) corn variety called YieldGard Corn Borer. Bt corn is a corn variety developed through genetic modification to resist the Asiatic corn borer, a major cause of declining corn yields.

Data from China show that the use of Bt crops can exacerbate populations of secondary pests. Long-term soil health may also be affected since the Bt gene stays with the soil even after harvest, and thus may impact on other microorganisms present in the soil and disturb the process of decomposition. But aside from effects on the soil and other microorganisms, Bt corn's target insects may develop a resistance to the Bt gene, making the variety's ability to resist the insect ineffective over time. This would almost certainly lead to the application of new and even more toxic chemical pesticides.

Adopting the technology may also lead to socio-economic problems. The non-government organization Southeast Asia Research Institute for Community Education (SEARICE) noted that in the US, where Monsanto has commercialized a number of GM crops such as soybeans, corn and cotton, farmers have been sued over violations of patent rights. Monsanto asks US farmers to sign a contract upon the purchase of their GM seeds. The agreement states that Monsanto is not selling the seeds but is merely leasing these to farmers based on the following conditions:

- Farmers are not allowed to replant the offspring produced from the seeds;
- Farmers are prohibited from exchanging or giving seeds to other farmers; and

- Monsanto will be allowed to monitor the field of farmers at anytime within three years from the time of purchase.

Since Monsanto owns the patent rights over the GM seeds, it has complete control the product and the processes involved in its propagation. SEARICE said farmers may lose the market for their corn products in the same manner that US farmers experienced losses when their GM crop exports were barred from entering countries that have stringent rules on the usage and adoption of GM crops.

Further, that producing bumper corn may also result in lower prices and losses for the farmers who may have to pay a premium for the Bt seeds.

On April 22, 2003, farmers and environmental groups staged a hunger strike to demand a moratorium on Bt corn commercialization. On May 14, 2003, the Department of Agriculture (DA) thumbed down their petition, citing lack of "compelling evidence" in support of it.

Monsanto's patent for an herbicide called Glifocate, which goes by the brand name 'Round-up', expired in 2000. 'Round-up' accounts for a major portion of Monsanto's income. In its despair to stay afloat, Monsanto is turning to GMOs (genetically-modified organisms) as a new source of income. Indeed, there is a gold mine in GMOs more than in the pioneer chemicals it has produced in the past. Once Monsanto is able to propagate its Bt corn, it would be the exclusive monopolistic source of Bt seedlings. And if all corn farmers were to buy Bt corn seedlings from Monsanto, it will more than make up for Monsanto's losses on expired chemical patents. The windfall is projected to be so huge, Monsanto will do anything to control the GMO market.

Another argument leveled against Bt corn is that its effects are IRREVERSIBLE. Once a field is planted with Bt corn, its pollen would infect every other corn crop in other fields. If evidence of Bt corn's side effects were later to emerge, the damage could no longer be corrected. Modifications on the corn crop cannot be undone at the gene level. By acceding to Monsanto's designs, the Philippine government has wittingly or unwittingly played right into the hands of this monopolistic agribusiness giant.

Sustainable Agriculture in the Philippines

Background

The concept of sustainable agriculture first came to light in the Philippines with the publication in 1980 of a report called "Profits from Poison". This report, prepared by the Farmers Assistance Board, a non-government organization (NGO) working in rural development, cited the negative impact of chemical agriculture on rice farmers. Another study, this time by the Agency for Community Education and Services (ACES), confirmed the findings of the earlier report, and showed moreover that rice farmers were economically better-off before their adoption of Green Revolution technologies. This study was eventually published in the mid-1980s as a small book called "The Miracle That Never Was".

The ACES findings were presented at the National Convention of Rice Farmers held

at the University of the Philippines Los Baños in July 1985. Soon after, the very first protest rally of rice farmers against the International Rice Research Institute (IRRI) was witnessed. Another offshoot of the Farmers Convention was the creation of an NGO called Farmer-Scientist Partnership for Development, Inc. In May 1986 this new organization launched its first project called MASIPAG (*Magsasaka at Siyentipiko para sa Ikauunlad ng Agham Pang-Agrikultura*). The MASIPAG project focused on rice breeding, allowing farmers to select the parent materials, based on desired plant characters, and to perform rice breeding (after intensive training). In the process of selecting progenies from varietal crosses, the farmers made it a policy to use no synthetic fertilizers or pesticides in the trial farms.

MASIPAG started with one trial farm in Nueva Ecija in 1986; it now has 219 such farms in Luzon, Visayas, and Mindanao, all being maintained by people's organizations (POs). Towards the late 1980s, other initiatives sprung up, including the biodynamic farming of the Centre for Alternative Development Initiatives (CADI); the International Institute for Rural Reconstruction (IIRR)'s biointensive gardening; and organic farms by the Organic Farming Field Experimental and Research Station.

In 1990, 15 Philippine NGOs formed the Sustainable Agriculture Coalition (SAC). Their initial activity was to each hold SA fairs in different parts of the country. Soon after, the Philippine Forum for Sustainable Agriculture was put together in 1991 by four NGOs primarily to exchange experience among themselves and with their partners. Awareness of SA spread further among NGOs with the holding of the highly publicized 1992 Earth Summit, at which SA-related concerns were given some prominence.

Xavier University in Cagayan de Oro established its Sustainable Agriculture Centre (SAC) in 1992. PAKISAMA, a national federation of peasant organizations, implemented its SA project in seven provinces.

SA also drew the interest and a certain degree of support from the government. For instance, the Department of Agriculture (DA), complying with the government's Agenda 21 commitments, started an integrated pest management (IPM) program. The College of Agriculture at the University of the Philippines Los Baños began to reorient its agriculture curricula towards SA by including courses on farming systems and ecological agriculture.

Meanwhile, some NGOs were hard at work trying to clarify what they meant by Low External Input Sustainable Agriculture (LEISA).

An NGO called AGTALON, based in Pangasinan (Luzon), defined LEISA for rice production as applying at least 10 bags of organic fertilizer plus a maximum of two bags of synthetic fertilizer (instead of 8-10 bags in the conventional system) and no pesticides at all.

Others qualified it as applying synthetic inputs at below recommended levels (for conventional agriculture). This continued dependence on agrochemicals put the LEISA adoptors in conflict with organic growers, who claimed that their products were superior to those of SA farmers.

In 1996, Filipino members of IFOAM, who had attended the 1995 IFOAM Asia Conference in Seoul, formed a coalition called FOODWEB for the express purpose of coming up with a set of Philippine Standards for Organic Production and Processing based on IFOAM Standards.

The Organic Producers and Traders Association (OPTA), formed in 1995, teamed up with FOODWEB for this task. Armed with a draft standards document, the FOODWEB group was joined by key staff of the Natural Products Division of the Centre for International Trade and Exposition Missions (CITEM) and together they formed the Organic Industry Technical Working Group.

At this time, too, the DA launched its "balanced fertilization program," which combines organic and inorganic fertilizers for rice production and which represents the government's idea of LEISA.

In the meantime, NGOs continued to churn out materials on SA, such as *Routing Sustainable Agriculture* by M. Viado *(1997)* and *Ecological Farming: Principles, Techniques That Work and Farmer Innovators in the Philippines* by H. Padilla *(1999).*

In June 2001, the Organic Industry Technical Working Group held a National Organic Congress. Besides raising awareness for organic farming among government officials and the general public, this meeting produced a sectoral consensus on action plans, as well as gave birth to the Organic Certification Centre of the Philippines (OCCP).

PO and NGO advocates of SA and organic agriculture (OA) demanded support from the government at the Agriculture and Fisheries Stakeholders Summit in May 2001. As a result, then DA Secretary Leonardo Montemayor issued an order creating a national task force for OA.

While the foregoing events bode well for the SA/OA movement, a number challenges remain in regard to the development of this farming system in the Philippines.

Coverage of Sustainable Agriculture

The coverage of SA in the country includes areas that are traditionally organic and those that have been converted from chemical farming. Traditionally organic areas refer to production areas which have remained largely free of synthetic inputs despite the Green Revolution. The most extensive of these are coconut farms.

Of the more than three million hectares planted to coconut, just 20 percent are treated with chemicals, and these only indirectly, because the chemicals are really intended for the crops intercropped with coconut.

Next to coconut, banana and coffee that are grown as backyard crops do not need chemicals. Neither does a great variety of fruit trees, cultivated on a small scale.

Estimates of areas under traditionally organic production are: 2.747 million hectares for coconut, 0.130 million hectares for banana, and 0.041 million hectares for coffee. Thus, organic coconut makes up 28 percent of the country's total agricultural area; while altogether, organic coconut, banana and coffee constitute about 30 percent.

Meanwhile, areas converted into organic production are mostly LEISA farms. According to the most recent estimates, such farms cover less than 100 hectares.

Rice

Three of the biggest groups involved in organic rice production (MASIPAG, Xavier University's SAC, and PAKISAMA) reported a total (i.e., combined) organic rice area of 2,675 hectares among direct members.

Assuming that there is at least a 10 percent simultaneous infusion to non-members, then the total area could be about 3,000 hectares. Assuming further that all the other small groups have a similar coverage of 3,000 hectares, then there is an overall total of 6,000 hectares under organic rice production, or a mere 0.2 percent of the total paddy rice area. Table 35 summarizes the total number of households and farm areas adopting LEISA and OA (as reported in February 2001 by the three groups).

Other Crops

The production area for organic sugar cane, banana, and vegetables is estimated at 0.1 percent of the total area planted to each of these crops.

Yield from Organic Production

PAKISAMA has reported the following average yields from organic rice (1996–1999):

- Luzon 3,350 kg/ha
- Visayas 2,974 kg/ha

Table 36. **Extent of OA and LEISA Adopters from Three Related Programs**

Group	Years Covered	Organic Agriculture		LEISA	
		Household*(no.)*	Area*(ha)*	Household*(no.)*	Area*(ha)*
MASIPAG	1990–2000	1,897	1,754	11,052	10,468
PAKISAMA	1997–2000	1,297	671		
SAC of Xavier University	1997–2000	229	250	120	153

- Mindanao 3,250 kg/ha
- Average 3,191 kg/ha/season

Meanwhile, MASIPAG organic farmers in Surigao del Sur have reported an overall average of 3,191 kg/ha/season for organic rice. This is only slightly less than the country's average of 3,350 kg/ha for irrigated rice under conventional or high-external-input farming.

The average organic rice yield by SAC was 3,440 kg/ha which is about 1,000 kg/ha less than the average of 4,400 kg/ha from conventional farms in the vicinity; however, the return on investment (ROI) from organic rice was 2.37, compared to 1.10 from conventional rice. In this instance, the ROI was based on the cash cost of production only; if both cash + non-cash costs were taken into account, the production cost would exceed the net profit from the conventional production system.

In the MASIPAG site in Surigao del Sur, an income analysis of the 30 organic farms gave an average ROI of 2.15.

Constraints to Conversion

Insecure Land Tenure

By far, the biggest constraint to conversion to organic production in the Philippines is the lack of land tenure security. Experience has shown that the best-managed organic farms are those that are owned by the cultivators themselves. Alternatively, some wealthy land developers have successfully put lands under organic production of vegetables and herbs using farm managers and workers. Tenants, lessees, and renters can hardly be expected to show any interest in converting to organic production unless the landowners themselves are determined to convert their lands and to pay for the cost of conversion.

Lack of Support Services for Organic Production for "New Landowners"

Agrarian reform beneficiaries (ARBs) are potential and strategic adoptors of organic farming. However, they must be given technical and production support for organic production, storage and processing, as well as assistance in certifying and marketing their products as organic.

Lack of Accredited Organic Certification and Instability of the Organic Market

Inadequate Education and Training

Farmers, especially those in marginal areas, need to be helped to appreciate the benefits of going into organic farming. Current education and training programs are limited to POs/NGOs and church-based organizations that already have OA and SA programs.

Lack of Financing

There is no proactive financing program for organic farming. On the other hand, studies have shown that successful organic farmers had access to financial support.

Unreliability of Organic Input Supply

Conversion is constrained by the lack of organic seeds, certified organic fertilizers and for the livestock industry, certified organic feeds.

Government Support for Sustainable Agriculture

Research and Development, Education and Extension

In the last few years, certain units in some government agencies have begun to show an interest in SA, or more specifically,OA. In 1997, the Philippines Council for Agriculture, Forestry, Fisheries and Natural Resources Research and Development (PCARRD) sponsored a national consultation workshop on OA at which representatives of organic producers and members of IFOAM were given the chance to interact with government researchers.

In 1998, PCARRD funded case studies of selected farms (organic, LEISA and conventional) which showed, among others, that the organic farm that used on-farm biomass gave a higher return on investment values than the LEISA and conventional farms.

In 1999, PCARRD and the Bureau of Agricultural Research of the DA funded a five-year R&D program, "Organic Vegetable Production," to be implemented by the University of the Philippines Los Baños Institute of Plant Breeding. Sometime after, PCARRD conducted a workshop-consultation on organic livestock production, focusing on organic chicken. The workshop was supposed to encourage support for organic chicken breeding and production by the Institute of Animal Science at the University of the Philippines Los Baños.

Another government initiative was a regionwide (Northern Luzon) organic production project by the Benguet State University, whose vice-president is an individual member of OCCP.

Characteristics of farmer-adoptors

Most Filipino farmers engaged in organic production are members of POs/NGOs or PO/church-based organization partners. Some of the POs have their own cooperatives, which are generally multi-purpose cooperatives and less frequently, women's organizations. A small percentage of the organic farmers are not members of any organization. Even fewer are adoptors involved in contract farming.

Marketing

The Agricultural Marketing and Support Services of the DA has offered groups of organic producers the free use of some space near the DA for the marketing of their products.

Regulatory Framework for Sustainable Agriculture

A document containing organic certification standards adopted from the IFOAM Basic Standards was prepared by FOODWEB in the mid-1990s, and refined in a series of regional consultations/workshops held in Luzon, Visayas and Mindanao. In the middle of year 2000, at a national workshop, the document was adopted as the Standards for the organic industry.

Soon after, the Organic Industry Technical Working Group made preparations for an orientation training in organic certification and inspection. In December 2000, selected members from the organic movement were trained by Swiss consultants. Based on this training and reference materials from various countries, a "Manual of Operations for Organic Certification" was drafted, along with an "Inspectors Manual". The Standards document adopted at the 2000 workshop was also scrutinized by a Swiss consultant to ensure consistency with international norms.

On the basis of these three documents, the Organic Certification Centre of the Philippines (OCCP) was officially launched on June 22, 2001. On the same occasion, the OCCP held its first General Assembly and elected its Board of Trustees from among representatives of member organizations. OCCP members consist of farmers' organizations and federations, NGOs, the private sector and individuals from some government agencies (CITEM, DA, and Philippine Coconut Authority) and the academe.

At the same time, an NGO, the Alliance of Volunteers for Development Foundation (AVDF), has also set up a certifying body, called "Philippine Organic Guarantee Incorporated" (POGI), which purportedly counts POs of indigenous peoples as members and conforms to IFOAM standards.

Meanwhile, the unaffiliated exporters of organic products have their products certified by foreign agencies.

Market for Organic Products

The global market for organic foods and beverages is worth some US$20 billion (2001). This figure is small compared to total food sales but the market for organic food is growing fast (as of 1998): by 20-30 percent in the United States and Switzerland; 30-40 percent Denmark and Sweden; 25-35 percent in the United Kingdom and Northern Ireland; and 20 percent in France and Italy. Such figures are not available for Asian countries; however, Japan accounted for US$1 billion sales in 1998, or one-fifth that of the US, and one-sixth that of the whole of Europe. Japan is clearly the largest market for organic food in Asia.

There are no comparable figures for the domestic market however. It may be indicative though that three NGOs providing marketing assistance to their farmer-members were able to market a total 70,814 cavans of their produce to a local vegetable trading centre in Benguet province.

Major Marketing Channels

Organic producers in Luzon, Visayas, and Mindanao market their produce under their own labels. In vegetable-growing areas in

Northern Luzon, some NGOs purchase organic products from farmers (with little vegetable plots) and sell these at urban centres. In places where there are POs of organic rice farmers, market outlets for organic rice are few, if any. In some cases, the NGO partners take on the task of marketing the rice, but these are the exception.

Organic vegetable growers had been selling their produce haphazardly until OPTA set up special outlets in Manila for organic vegetables, and thereby distinguished these from conventional farm produce.

Meanwhile, organic food exports are handled by only a few groups. One of these, Altertrade, is a private corporation based in Bacolod City in the Visayas that supports small and marginalized farmers. An IFOAM member, Altertrade is the only Philippine company with international organic certification to export organic sugar (*muscovado*) and table banana. Altertrade buys organic banana from small growers in Negros and Bicol and exports these to Japan. It also exports organic banana chips to Canada in partnership with the Organic Verification of North America based in Winnipeg, Manitoba.

Altertrade is itself a producer of *muscovado* (sugar produced by heating sugar cane juice in open pans) and regularly exports this product to Europe and Japan.

Pricing Sustainable Agriculture Products

The price differential between organic and conventional products is determined primarily by quality and the target market. For instance, prices for organic fancy rice (red rice, black rice, aromatic rice), patronized by the high-income class, can go up to 100 percent more than ordinary conventional rice, which has no equivalent fancy varieties. For the middle-income class, a slightly higher price (10-15 percent more) is tolerable. Once the products have been certified as organic, prices are expected to go up even higher.

Post-harvest Handling

There is no major post-harvest facility for handling organic products.
Each trading group handles only such volumes as they can manage.

Success Stories in Income Generation and Employment

At the household level, a selected success story is the one-half hectare irrigated organic rice farm within which diversified economic activities gave much higher income than the main rice crop. Net income from its various components within the six-month period of the case study gave a monthly income of more than PhP 20,000, which reached the income level of an assistant professor of a local state college in the area. Other success stories, but no income measurements, are given in the book, Ecological Farming *(Padilla 1999).*

With respect to organic enterprises beyond household employment, a success story is the A.P. Inocencio Teresa Farms which produces organic chicken. As mentioned previously, the farm meets all the requirements

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of an organic production system except for the corn and legume grain ingredients in the feed formulation which do not come from organic sources. The Inocencio Farm used to be a large-scale conventional poultry farm (100,000 heads) which was converted into an initially small-scale organic poultry farm. Since Inocencio is pioneering the organic system, he was not inclined to go into rapid expansion.

Instead he is establishing satellite farms in different parts of the country. This is also part of his experimental approach to determine the local adaptability and meat quality of the Sasso breeds, some of which have been cross-bred with native roosters.

The success story of the Inocencio Farm relates to the success of his shift from conventional into organic production in spite of the fact that there has been no official R and D programme as a source of local technologies for organic poultry production. In the process, Inocencio developed an attitude of greater commitment to social and ecological values rather than purely economic, as was the case of his previous conventional farm.

— From the paper of Dr Angelina Briones, Professor of Soil Science, University of the Philippines at Los Banos, Laguna, Philippines.