CHAPTER – 6

INFERENCE, RECOMMENDATIONS AND POLICY IMPLICATIONS
INFERENCE, RECOMMENDATIONS AND POLICY IMPLICATIONS

6.1 INTRODUCTION:
It is now well-known that economic systems and biophysical environments cannot be satisfactorily considered as independent entities. Particularly in sectors of the economy, such as agriculture, which are highly dependent on living resources and the state of the biosphere, separation of the economic and biophysical spheres is especially untenable as a basis for analysing sustainable agricultural development.

A unique characteristic of agricultural resource problem is the close linkage with physical and biological sciences, hence the need to capture physical and biological phenomena in developing the associated economic framework. The current focus on sustainable agriculture really is an attempt to capture these linkages. Sustainable agriculture is defined as a production system that can be maintained over the long run, while ensuring profitability, productivity, and environmental quality. Such a system may involve the substitution of more farm source inputs for purchased chemicals, and the substitution of crops that enhance nutrients and contribute to pest control for more conventional crops, as well as the substitution of technology and information for conventional practices. (Miransowski and Carlson, 1993, p.6)
Attention to the conservation of natural resources is needed to sustain agricultural production and development. **There are limits to production and the speed at which it can be increased.** A technical fix is not always available for every agricultural problem, and if there is a technical fix, it may be so costly, that it is not worth pursuing, and / or it may have been more economical to have avoided the environmental problem in the first place. The analysis of sustainability, thus calls for a holistic approach (Tisdell, 1999, pp: 38, 55).

The concept of a closed ‘Spaceship Earth’ popularised by **Kenneth Boulding** (1964) and later on by **G Tyler Miller** (1970) is relevant in this context. According to this concept, we live in a closed system and by the ‘**law of conservation of nature**’, what goes in must come out, although usually in altered form. All production processes produce unwanted residuals and agricultural production is no exception to the law.

**Lack of agricultural sustainability often has its roots in market failures.** Externalities are an important source of agricultural unsustainability. Private economic profitability of the use of a technique or agricultural system is necessary. However, this does not mean that the technique is socially desirable, or that its social economic return is positive. The private costs of using a technique may be less than its social cost, because some of the costs are passed on to others, without compensation, and consequently externalities
occur. The cost of producing any good or service tends to be a mixture of priced inputs (labour, capital, technology, etc.) and un-priced inputs (environmental services).

The negative side-effects of chemical agriculture are now well-known. Environmental damage is irreversible in many cases, and where it is not, it would imply a huge cost to develop and implement techniques, to solve a technologically induced problem. The quality of natural resources also will get more and more affected. In addition to this, chemical agriculture also affects the health of farmers and consumers. Thus, the external costs of chemical agriculture are borne by the environment, and the society as a whole.

Moreover, what is generally overlooked is the fact that some of the external cost might in fact become an internal cost to the farmer himself. Diminishing returns in agriculture, irreversible damage to soil fertility, pesticide resistance, pest resurgence, would all lead to a gradually increasing private cost to the farmer, thus internalising the externality effect.

Furthermore, chemical agriculture depends largely on costly inputs. In the initial stages of the Green Revolution, these inputs were subsidised. Under the impact of liberalisation and globalisation, subsidies have been reduced. In the meantime, there is increasing use of chemical fertilizers, because agro-chemicals behave like ecological narcotics, the more you use, the more you need. Most
of the pesticides available in the market are very expensive, and out of the reach of the poor farmer. Due to lack of information about how much to apply and how frequently, in most cases, either too little or too much is applied. Application of less than the prescribed dose does not kill pests, while application of too much destroys the plants as well. In either case, the farmer is the loser. Increasing costs, thus make chemical agriculture a losing proposition for farmers and eventually leads to a negative economy, with costs of production becoming higher than the price farmers get from their crops, pushing farmers into debt and suicide. (Shiva, et al. 2004, pp. 40, 41) Thus, increasing costs and gradually declining yield, would finally lead to lesser output and losses.

This kind of agriculture would be neither ecologically nor economically viable in the long run. Hence, it is evident that there is a pressing need to develop an alternative strategy before it is too late.

6.2 THE INference OF THE PRESENT STUDY :

Based on the review of literature, interviews with farmers, experience of farmers converted to organic farming, experimental work, and discussions with other stakeholders, this study concludes that organic farming would be economically viable in the long run; i.e. after the initial conversion period. It would be worthwhile to quote Bhiday (1995. p: 12) in this context, who feels that results from a lot of comparative studies confirm that organic farming systems can be viable, even highly successful in
terms of yield and cash returns, and they have a positive contribution to the environment, and the health of the soils, produce, and humans.

**What is needed now is a shift in the priorities of organic research.** The main purpose is to develop and improve the organic agriculture systems, so that they are better able to meet the range of agricultural, environmental, and economic criteria, which are regarded as important for human development.

The organic and chemical systems are currently placed on unequal ground, as a result of the Government support, policy initiatives, and research and development, received by the chemical system in the past century. Even then, the experience of a whole lot of successful organic farmers, here, and in other countries has proved that these farmers are at par with if not outperforming their conventional counterparts. Literature on organic farming is replete with such examples. However, as generalisations cannot be made on the basis of some successful organic farmers only, it would not be improper to mention here, that **organic farming may not be economically viable in the short run, due to a drop in the yield during the conversion period.** The conversion period from chemical to organic farming is generally around 5 years. It is during the first 2-3 years that yields might drop to 10-30 per cent, or even 50 per cent in some cases. This might particularly be true in the case of those soils which have been exposed to intensive farming with high use of chemicals. On the other hand, those soils, which have received very little dosage of chemicals, and have yet not reached the point of diminishing returns
might benefit with a little dose of NPK as also which organic manures. Hence, the success of organic farming would depend upon the type of soil, and the level of chemical intensity, among other things.

Thus, the inference would depend upon the definition of viability. If economic viability is defined in the narrow sense, to include only cost of production, yield, price, and income, organic farming may not be economically viable in the short run. If, however, viability includes in its scope, the social and environmental costs, and the negative and positive externalities, organic farming may turn out to be the sound alternative to the current system. However, the difficulties in quantifying these costs, and adding them to the private costs, often lead to a neglect of the fact that these costs exist, and are also considerable. The real costs of externalities to the society are too important to be ignored, especially in resource dependent sectors like agriculture. Chemical agriculture would not have been economically viable even in the early stages of the Green Revolution if externalities were imputed; this not withstanding the fact that heavy government support was required to make it viable in the first place.

6.2.1 The Problem of Externalities:

Environmental goods and services and the general functions which environments serve, are not invariably bought and sold in the market-place. Thus, if we leave the allocation of resources to the
unfettered market, it will tend to overuse the services of the natural environments.

Valuing the cost of externalities is a science still in its infancy. Much of the basic knowledge and research methodology needed to understand the effects of externalities remains to be developed. Even when the effects of externalities are reasonably well-understood, calculating their costs to society remains a difficult task. Some of these costs can, in principle be quantified, but many others involve non-market goods and depend on highly controversial judgements such as the monetary value of human life.

Several attempts have been made by environmental economists to measure the externalities. According to Zilberman and Marra, (1993, p: 221), it is uncertain how much information the polluters, pollutees, and regulatory agents have, regarding the source and extent of externality and what are the costs to each of additional information.

The Study by Steiner, et al. (1995, pp: 210-230) is relevant to the problem of agricultural externalities. They feel that to be truly accurate, externality costs can only be calculated on a location-specific basis, which currently is impossible because of the lack of information. According to them externality costs of agriculture can be broadly divided into:
a) **Pesticide Externalities**

- Regulatory costs (including chemical control costs, water pollution control costs, the costs of acute and chronic health effects of pesticides).
- Environmental externalities of pesticide use (including reduced natural enemies and secondary pest outbreaks, pest resistance, crop and tree loss, bee poisonings, fish and wildlife losses, and domesticated animals’ deaths)

b) **Fertilizer Externalities**

- Regulatory costs (health costs to society due to presence of nitrates in drinking water).
- Environmental costs of fertilizer use.

c) **Externalities associated with soil erosion**

They conclude that despite their importance in evaluating the sustainability of agricultural systems, externalities continue to be neglected in most productivity analyses. “Using the inaccuracy of our knowledge as an excuse to ignore externalities would be an unconscionable error – it would assign a value of zero to environmental costs, one even the most skeptical critic would have difficulty defending.” (Steiner, et al, 1995, p: 230)

According to Pretty (1999, p: 85), in theory, we should be able to calculate the benefits of, say, pesticide use, the financial costs of their use, and the external costs. The benefit - cost ratio would be calculated as benefits divided by financial costs plus external costs. However, in practice, it is very difficult to make this calculation. The
problem lies in the difficulty of putting a price on non-marketable goods. Another problem is that the data that exist are often for the cost of cleaning up a problem. It does not reflect an individual’s willingness to pay to avoid the problem occurring in the first place.

6.2.2 Approaches for Measuring Externalities:

Pearce, et al (2002, pp: 51-74) have listed the following approaches for measuring externalities.

a) The direct technique, which includes surrogate approach and the experimental approach.
   a. The indirect technique
   b. The hedonic price approach
   c. The contingent approach
   d. Existent values

Pearce, et al (2002) feel that it is not easy to accurately estimate environmental cost. **However, by at least trying to put money values on some aspects of environmental quality, we are underlining the fact that environmental services are not free.** They do have values in the same sense as marketed goods and services have values. The absence of markets must not be allowed to disguise this important fact. Secondly, by trying to value environmental services, we are forced into a rational decision-making frame of mind. The fact that we find positive values for so many environmental functions means that an economic system which allocates resources according to economic values must take
account of the positive values for environmental quality. (Pearce, et al. 2002, pp: 80, 81)

Hence, if we take into account, this point of view, and define ‘economic viability’ in a wider sense, it is clear that organic farming has social and environmental benefits, which, if imputed, would make the system viable even in the short run. According to Lampkin (2002, p: 552), “If organic systems can contribute to reducing the external costs, while at the same time enabling individual producers to earn a living, then the organic approach would have much to recommend it from the point of view of society as a whole. The absence of externalities is one of the set of first best conditions required so that competitive markets will achieve a (Pareto) efficient resource allocation. (Zilberman and Marra. 1993, p: 221) Although organic farming may not always imply a complete lack of negative externalities, it still reduces them to a large extent, and hence is the only logical alternative approach.

6.2.3 Organic Farming, Chemical Farming, And Mixed Farming:
Chemical agriculture is reaching a point of diminishing returns, and increasing private, social, and environmental costs. An economy experiencing economic growth cannot be said to be on a sustainable growth path, if there is evidence that the feedback from changes in the environmental quality will induce non-sustainability.

However, a sudden, immediate, and complete shift to organic farming on the macro level is not advisable, in fact, it would be
suicidal. Hence, in the coming decade, mixed farming or which M S Swaminathan (2007) refers to as ‘Green Agriculture’, should be the aim of the agricultural policy.

This system minimises the use of agro-chemical inputs, avoiding them as much as possible. However, where absolutely necessary, it allows the use of chemical inputs to solve temporary problems like the deficiency of a particular nutrient, or the attack by a particular pest. Hence, reducing the excessive use of chemicals, and a gradual shift towards organic farming is the need of the hour.

6.2.4 Some Concerns about the Future of Organic Farming:

Organic farming is tremendously knowledge intensive, and hence lack of proper knowledge of combinations of inputs, symbiotic crops, inter-cropping, prey-predator relationships, bio-fertilizers, bio/botanical pesticides, etc., can spell disaster for the farmer. There are numerous examples where farmers have simply stopped applying fertilizers in an endeavour to turn to organic farming, and incurred unexpected losses. Most of the ecological farmers do not know when and how to switch over, and most of them do not have any information about how to change. Very often, farmers forget some important aspects like plant protection, when they proceed to change the soil fertility management using organic manures. (Mishra, 1994, pp: 114,115)

Further, organic inputs might not be easily available. This is partly due to lack of demand, in the case of marketed inputs.
However, as far as farm-derived inputs are concerned, their availability may be restricted due to a number of reasons, like reduction in the number of farm animals, non-availability of medicinal plants for the purpose of organic pesticides and insecticides, and more importantly the lack of know-how to convert the farm waste and organic matter into manure, and the use of medicinal plants as pesticides. Hence, these factors could lead to serious bottlenecks for organic farmers in the future. A review of the availability of organic inputs, both, farm-derived for self-consumption, and marketed, must be carried out before recommending a switch-over to organic farming. What is even more serious, is the fact that lack of certified and standardised inputs can lead to spurious products being sold in the market leading to the deception of farmers.

In addition to these factors, there is lack of awareness among the consumers about the ill-effects of chemicals on health. The environmental concern is mostly not appreciated as ‘everybody’s business’ generally becomes ‘nobody’s business’. Thus, social inertia sometimes prevents transition to new techniques which give greater economic sustainability than the existing ones. (Tisdell, 1999, p: 55) On the other hand, certain consumers who can afford a higher price and are health conscious do not mind shelling out extra money for seemingly ‘safe food’. However, these consumers are few in number, and presently, the domestic organic production caters to these consumers only, making it a niche sector.
An important problem regarding organic products is the lack of organised markets for organic products. Lack of certification and labeling make the consumers susceptible to swindling by sellers. There is no guarantee that the product is genuinely organic, which further affects the aggregate effective demand for organically grown food. Sellers might take advantage of the ‘snob appeal’ for organic food, deliberately charging an unjustifiably high price. In the absence of certification, some consumers also believe that a product is not organic if it is not expensive, leading to high prices being deliberately charged. Thus, exploitation can take place at the level of the farmers, by sellers of organic inputs; and of the consumers, by sellers of organic products. Similarly, this also implies that a genuine organic product, justifying a higher price, may have to be sold at a lower price due to lack of certification.

Another significant fact is, that market systems may encourage the adoption of a biophysically unsustainable technique; for example, the use of a chemical input in agriculture, which lowers current costs and boosts yields in the short run, but eventually lowers yields and raises costs in the longer term. Because of competitive pressures, a handful of farmers cannot hold out against the market trend. Once such a new technique is used, it may be impossible to revert to the previous process, except at a high cost, even when the cost of production employing the new technique eventually rises above that of the old. Perfect reversibility is difficult, because path dependence is present. In the longer term, however, reversion to the previous technique might occur as the new technique becomes quite
uneconomical. However, the previous technique might have to be modified to suit the new situation.

Moreover, there is often bias in economic systems in favour of marketed goods. These are likely to be promoted and advertised, because suppliers profit from it. This often leads to a ‘chemical lobby’. The use of chemicals in agriculture may be encouraged in preference to the use of natural ingredients available to farmers on farms. Market failure can thus result in the use and development of agricultural techniques which lack sustainability and which reduce long-term economic welfare.

There is great responsibility on the government to propagate the correct combinations of techniques and methods, set up an institutional framework conducive to sustainable agriculture, and set up standards so that the farmer, both as a seller and buyer is not exploited, nor is the consumer. Information dissemination is also an important function of the government. A role exists for the government to provide economic and other incentives to encourage sustainable conservation farming. Unfortunately, however, governments working under the pressure of increasing output, have often in the past had to subsidise agricultural systems that conflict with the adoption of conservation farming practices.

The most important problem faced by organic farming today, is the lack of adequate scientific research. Although most of the Agriculture Universities are undertaking research in organic farming.
it is still not sufficient to cover the wide spectrum of processes and
practices that the system offers. Moreover, **research often does not
reach the people for whom it is meant** and hence the development
of a link between research institutes, the government, and the
farming community is essential.

To re-iterate the inference of this study:

- Currently, the organic and chemical systems are on **highly
  unequal ground** due to the heavy government support given
to the chemical system for about five decades.
- Even then, organic farming has **proved to be economically
  viable on the micro-level of individual farmers**, both in
terms of monetary as well as real benefits.
- Generally, a **drop of yield is seen in the conversion period**
of 3-5 years; however reduced yields might often be
  compensated for by reduced costs.
- Yield picks up after the conversion period, making it highly
  comparable with that under the chemical system, thus making
  organic farming viable in the long run.
- If externalities could be imputed, organic farming would be
economically viable even in the short run.
- Considering the **problem of food security, on the macro –
  level, a complete, immediate or sudden shift to organic
  farming is not advisable.**
- A proper **technological mix** should be developed; where as
  much as possible the plant requirement is met through organic
manures, bio-fertilizers, and bio- and botanical pesticides, using chemical fertilizers and pesticides only when required. Hence, 'mixed farming', 'ecological farming', 'sustainable agriculture', or 'green agriculture' as it is often referred to, should be the immediate goal on the macro level. This would serve the twin objective of reducing private, social, and environmental costs, while maintaining the yields at the macro level.

6.3 RECOMMENDATIONS AND POLICY IMPLICATIONS:
The application of the principles and tools of economics helps in sorting out the problems of agriculture, and enables its sustainable growth. Economics, in fact, deals with the problem of allocative efficiency. The problem of scarce means to alternative uses is more crucial in the field of agriculture than for the other sectors of the economy. It is because the pivot of agricultural pursuit, i.e., land and natural resources are highly limited. The task of the agricultural economist, thus, is to recommend the optimum scale, i.e., an ideal combination of different factors of production in the interests of the agricultural community. (Mishra, 1994, p: 20) Economics and Ecology must be completely integrated in decision-making and law-making processes; not just to protect the environment, but also to protect and promote development. (Our Common Future, 1987, pp: 37, 38) The problem exists simultaneously on many levels and hence calls for an integrated and multi-disciplinary approach.
6.3.1 A Brief Review of the National Programme for Organic Production (2000):

India announced its National Agricultural Policy in July 2000, to prepare agriculture to face the emerging challenges and to help in achieving the goals of growth sustainability, equity, and efficiency. The strategy and policy alternatives are grouped under the following heads:

1. Sustainable Agriculture
2. Food and Nutrition Security
3. Generation and Transfer of Technology
4. Inputs Management
5. Incentives for Agriculture
6. Investment in Agriculture
7. Institutional Structure
8. Risk Management

The NAP mentions sustainable development of agriculture through soil conservation and enrichment, multiple cropping and intercropping, conjunctive use of surface and groundwater, genetic conservation, balanced use of organic and inorganic fertilizers, and controlled use of agro-chemicals through Integrated Nutrient Management (INM) and Integrated Pest Management (IPM). It also makes a passing reference to the history of traditional knowledge of agriculture, particularly of tribal communities, relating to organic farming and preservation and processing of food for nutritional and medicinal purposes, which should be pooled and harnessed for
sustainable agricultural growth. However, there is no mention of organic farming in the NAP, as an alternative method of production that can be suitably exploited to benefit some segments of farmers (Chand, 2004, p: 45). Nevertheless, a policy framework for organic production in India has been formulated in the same year. In 2000, a National Steering Committee (NSC) appointed by the Ministry of Commerce under the Government of India, established a set of guidelines under the National Programme for Organic Production (NPOP). These are based on guidelines of international agencies like IFOAM, European Standards, US, Japan and CODEX standards. This marked a formal initiative by the Indian Government to consolidate the hitherto separate efforts of institutions and NGOs in setting up organic standards. The main components of the NPOP Standards and guidelines are:

1) Policies for development and certification of organic products.
2) National Standards for Organic Products and Processes (NSOP)
3) Accreditation programmes to be operated by inspection and certification agencies.
4) Certification of organic products.

The NPOP, thus, focuses on the **setting up of standards, certification, and accreditation**. In addition to this, various State Governments have either formulated, or are in the process of formulating their own policies on organic farming in their respective states. Prominent among these are the North – Eastern States, Karnataka, Andhra Pradesh, Kerala, and Maharashtra.

228
6.3.2 The Economics of Organic Farming and the Role Of the Government:

1) Organic in Installments:

Typically, farmers experience some loss of yield after stopping the use of synthetic inputs and converting their operations to organic farming. Before restoration of full biological activity (e.g., growth in beneficial insect population, nitrogen fixing from legumes) pest suppression and fertility problems are common. One strategy involves converting farms to organic production ‘in installment’ so that the entire operation is not put at risk. This recommendation is already made by the Andhra Pradesh and Maharashtra Governments (2007).

The Karnataka Government’s State Policy on Organic Farming (2004) also states that the shift from the current method of cultivation to organic farming should be gradual, and an Area Approach should be followed, where villages should be converted to organic farming in a phased manner.

The Kerala Government too proposes to develop a clear road map to convert 20 per cent of the total cultivable area in the state every year, so as to achieve the total conversion to organic farming in 5 years. (Newindpress.com, Sept, 9, 2007)

Thus, the use of agro-chemicals should be reduced in a phased manner. Several studies have proved that yields can be kept
constant by substituting FYM and compost in place of NPK, even up to 50 per cent, in some cases.

2) Default Organic and Organic Zones:

The Green Revolution has not made much headway in certain areas like the North-East Region (NER). Such areas can be said to be ‘Organic by Default’. These areas have very little; in some cases even zero use of agro-chemicals. The agricultural system in this region is mostly traditional and organic. The use of agro-chemicals is restricted only to some crops like foodgrains and vegetables. Almost the entire fruits and spices cultivation in the NER is done traditionally on organic basis. (EXIM BANK, 2003, p: 116) These areas can be developed as ‘Organic Zones’. An attempt of this kind has already been made in Mizoram and Sikkim. **Mizoram became the first state to pass the Organic Farming Bill in July 2004, and is on its way to become the country’s first fully organic state.** The policy is to help the farmers phase out the use of chemicals. According to official estimates, the chemical cost per acre for sugarcane in Mizoram was found to be Rs. 17,000/-, compared to Rs. 2,200/- in an organic farm. (The Maharashtra Herald, July 14, 2005, p: A6) The Mizoram Government had already banned the use of chemical fertilizers and pesticides in grape and passion fruit belts in 2004.

Similarly, the Maharashtra Government too has launched a technology mission for organic farming in Vidarbha, the area most plagued by farmer suicides. The mission focuses on the Wardha,
Yavatmal, Amravati, Akola, Buldhana and Washim districts of Vidarbha. The Government plans to bring 5 lack hectares of land across the state under organic farming by 2009. The state has received Rs. 1.85 crores from the 57 crore central funds earmarked for popularising the national organic farming programme. The State Government also has grants to start outlets to sell organic produce. (The Times of India, February 1, 2006)

Dhule in Maharashtra, too is witness to a growing organic movement. The Dhule Agriculture University devised a programme of Integrated Pest Management that included inter-cropping. Official figures show that 26,000 of Dhule’s 5.5 lack hectares of farm land are currently witnessing only organic cultivation. The District Agricultural Officers and the Agricultural University in consultation with farmers have discussed ways of preparing ecological pesticides from farm wastes. The farmers have also formed a local organic association and believe that organic farming has reduced the input costs by 30 per cent.

This is a trend that the National Commission for Farmers head, M.S. Swaminathan (the father of the Green Revolution) welcomes, to the extent of saying that suicide prone Vidarbha be made an organic farming zone. (The Indian Express, September 15, 2006, p:13)

Even Andhra Pradesh, a state with high pesticide consumption has IPM as the centerpiece of its agricultural strategy, which has been talking of minimising pesticide use. In the Khamman district of
Andhra Pradesh, pesticide use is high as compared to other districts and has a large number of suicides by indebted cotton farmers in the past decade. ‘Down to Earth’ interviewed farmers in Palavancha, Kothagudem and Tekulapalli. Farmers in almost 10,000 acres have stopped using pesticides on cotton without anybody asking them to do so. They feel that pesticides on cotton mean a guaranteed loss, as there is no difference in yield whether pesticides are used or not, due to pesticide resistance. In 2004, Punukula village became the first in the state to completely implement non-pesticidal management and free itself from pesticide use.

The most recent to join in is Arunachal Pradesh, which has been declared as an organic state with immediate effect in February, 2007. The use of chemical fertilizers will be gradually discouraged in areas where it is used excessively.

The Kerala Government is also expected to announce its organic farming policy soon. Kozhikode and Wayanad districts are likely to be declared as organic zones. Later, the project will be extended to Palakkad, Idukki and some other districts. (The Hindu, Sept 17, 2007)

The Government of Jharkhand has made a special provision of Rs 147 crores in the budget of 2007-08 for the development of the agricultural sector, with special emphasis on organic farming. Currently, 10 lakh hectares of farmland in the state are under organic farming. The Government plans to give organic farming a boost by
helping farmers with technology, knowledge, secondary occupations, and marketing for organic farming.

Thus, it can be recommended that those areas, which are organic by default, be promoted as ‘organic zones’. Similarly, those areas which have voluntarily turned organic should be given help in the form of training programmes and information dissemination.

Similarly as mentioned earlier, the Government should aim at reducing the use of chemical fertilizers and pesticides in those areas where there is excessive use. However, this implies a reduction in purchased chemical inputs, and not inputs per se. There should be a concerted effort to introduce IPM and INM. Chemicals should be allowed where absolutely necessary.

3) **Certification:**
Lack of certification is seen as an important problem faced by organic farming, if products are to be marketed as ‘organic’. The problem of certification is present in the commodity as well as factor market in the case of organic farming. As mentioned earlier, there is a chance of exploitation of the farmer, as a buyer of organic inputs in the factor market.

Similarly, the consumer could be exploited in the commodity market. Since there is no monitoring of the residues in food, consumers have no option but to consume food having high levels of residues. While the world over, efforts are made to satisfy consumer
needs, consumers in India are exploited in every sphere. Organic food supply would help provide an option in food choice. Surveys have revealed that about 60-70 per cent of the middle and higher income categories would prefer to buy organic food (IIM, 1999, p: 26-8)

To stop exploitation of all concerned, there is a pressing need for a centralised, efficient, and uncorrupt body, which would operate locally, would certify organic products, and set standards for organic food.

One of the main aims of the National Programme for Organic Production (NPOP), launched by the Ministry of Commerce, Government of India, in 2000, was to design and establish national standards for organic products which could be sold under the logo ‘India Organic’. According to the Accreditation Regulations announced in May 2001, it is mandatory that all certification bodies, whether national or foreign, operating in the country, must be accredited by an Accreditation Agency. Currently, the following agencies (mainly various commodity boards under the Ministry of Commerce) have been approved as accreditation agencies by the Government of India:

- Agricultural and Processed Food Products Export Development Authority (APEDA)
- Spices Board
- Tea Board
- Coffee Board
• Coconut Development Board
• Directorate of cashew and cocoa boards.

There are five international inspection and certification agencies, which have so far been approved by most of the accreditation agencies in India. These are:
• IMO Control (Pvt.) Ltd., Bangalore
• SKAL International Trade
• SGS India (Pvt.) Ltd.,
• ECOCERT India Ltd.,
• Lacon GmbH

Currently, only the exports of organic products come under government regulations, which implies that in India, food can be sold as ‘organic’ without certification. The domestic market is small; basically operating on ‘trust’ and hence does not warrant expensive measures like testing, inspection, and certification. The organic input market is also highly neglected. Although the philosophy of organic farming emphasises the use of self-produced, farm-derived inputs, if the farmer wants to buy organic inputs from the market, he has to rely on the goodwill and market standing of the seller.

Thus, there is a need to set up certifying institutions locally, under one central umbrella organisation, making them accessible to the farmers. Moreover, such agencies should be specially located in
Andhra Pradesh, pesticide use is high as compared to other districts and has a large number of suicides by indebted cotton farmers in the past decade. ‘Down to Earth’ interviewed farmers in Palavancha, Kothagudem and Tekulapalli. Farmers in almost 10,000 acres have stopped using pesticides on cotton without anybody asking them to do so. They feel that pesticides on cotton mean a guaranteed loss, as there is no difference in yield whether pesticides are used or not, due to pesticide resistance. In 2004, Punukula village became the first in the state to completely implement non-pesticidal management and free itself from pesticide use.

The most recent to join in is Arunachal Pradesh, which has been declared as an organic state with immediate effect in February, 2007. The use of chemical fertilizers will be gradually discouraged in areas where it is used excessively.

The Kerala Government is also expected to announce its organic farming policy soon. Kozhikode and Wayanad districts are likely to be declared as organic zones. Later, the project will be extended to Palakkad, Idukki and some other districts. (The Hindu, Sept 17, 2007)

The Government of Jharkhand has made a special provision of Rs 147 crores in the budget of 2007-08 for the development of the agricultural sector, with special emphasis on organic farming. Currently, 10 lakh hectares of farmland in the state are under organic farming. The Government plans to give organic farming a boost by
those areas which are default organic. This would enable the organic farmers to take advantage of their default organic production in terms of premium prices. Also, care must be taken so that the procedure of certification should not be too complicated or lengthy. The cost of certification must also not be too high. The certification agency should be a government funded agency, at least in its early stages. The Agricultural Universities could be used as accreditation agencies for this purpose.

4) **Standardisation:**

The need for standardisation arises on several fronts. As for agricultural output, it is difficult to produce standardised commodities; standardisation would imply monitoring of chemical residues in the produce, a check on artificial colouring and injecting to improve the colour and look of the product, and so on. Punitive actions need to be taken to control the indiscriminate use of pesticides, such as dipping vegetables in pesticides before marketing.

Standardisation, however, could be easier to achieve in the case of agricultural inputs. There can be stringent norms as to the range of percentage of nutrients present in organic manures available in the market. Many times, it is seen, that organic manures available in the market have mostly mud, and even small stones at times, to increase the weight of the packet. If there is proper checking and monitoring as to the range of nutrient content and genuineness of the organic inputs sold across the counter, it would stop exploitation and cheating of farmers by companies selling these inputs. However,
such standardisation and certification should be voluntary in the beginning, as it would increase the cost of the input. Nevertheless, the farmers would get an option whether to buy the certified or uncertified input.

5) **Labeling:**
The problem of labeling is closely connected to that of certification and standardisation. Based on the inspection, the products will have to be labeled as ‘organic’. **Presently products are labeled ‘organic’ without certification and inspection.** It would be worthwhile to follow the USDA’s labeling method, which labels organic products as 100 per cent organic, 95 to 99 per cent organic, 70 per cent organic, depending upon the inspection and certification. Such a labeling system would help in creating a transparent, realistic and non-exploitative market; at the same time providing options for customers at different prices. The same would hold true of organic inputs.

6) **Backward Linkage Effect:**
Forward linkage between agriculture and industry is very common. The Green Revolution for the first time reversed this equation, by creating a backward linkage between agriculture and industry, where the industrial sector provided for inputs for the agricultural sector. These inputs were in the form of higher yielding varieties of seeds, chemical fertilizers, pesticides, insecticides, and other equipment and machinery. Before the advent of the Green Revolution, agricultural
inputs were mostly local and farm derived, and used for self consumption. Hence, there was no scope for industrially produced inputs. It is true that the organic farming philosophy in most cases, still propagates the use of self-produced farm-derived inputs (which is also one of the reasons why the monetary cost of production goes down, as opportunity cost is generally not imputed). Proponents of organic farming lay stress on preparing all the required inputs on the farm itself, which does not necessitate the purchase of inputs from the market, thus reducing costs and also the excessive dependence of farmers on markets. While on the individual farm level, having enough fresh biomass, farm waste, and animal excreta, this approach is generally seen to be beneficial, it may not be possible to produce inputs on the farm for a large scale enterprise, and at all times. Besides, it would also require the availability of farm and animal waste, medicinal plants, and labour.

Interviews and discussions with farmers revealed that the number of people with their own livestock is diminishing and hence they cannot produce organic manures on the farm itself. Such farmers, thus, are left out of the scope of organic farming, although they would like to use organic farm-derived manures. Moreover, great deal of knowledge is required to produce organic pesticides, bio-fertilizers, bio-pesticides, and even compost. Such technical knowledge might not be available to the farmers.

The solution to this problem is the promotion of the organic input industry, which would not only increase employment activities in
the rural areas, but also increase the availability of organic inputs to farmers. The cost of production could increase for the organic farmers, due to the use of market produced inputs. However, the farmer would have a choice in this case, and depending upon the demand and supply conditions, the price would get altered.

Thus, a vast and important area of the development of organic agro-input industries needs to be studied in detail, with reference to its financial viability, linkages, and market demand. Attention must also be given to bio-fertilizers and pesticides, which would offer a huge scope for the organic input industry. However, this would be restricted to organic manures and pesticides and not seeds, as organic farming excludes from its scope the use of genetically modified, hybrid, or improved seeds; focusing mainly on local, indigenous, and saved varieties.

7) Employment Generation:
Organic farming is often associated with increased labour use and in theory, could help to maintain or even increase rural employment. In practice, labour requirements are not necessarily higher, and where they are, the labour required is often casual and seasonal. Even in case of increased labour use, it is believed that it would increase employment opportunities and reverse migration to rural areas. The diversification of crops typically found on organic farms, with their different planting and harvesting schedules may distribute labour demand more evenly, which could help stabilise employment.
The Karnataka and Maharashtra Governments have viewed the backward linkage effect of organic farming, discussed earlier, as an income generating activity for small and marginal farmers on a commercial scale. They have facilitated the creation of producer companies (PCs). All the members of a PC will have one vote each. The PCs will be given the required financial assistance to create a package of practices, infrastructure packing and labeling facilities, and so on.

Critical inputs required for organic farming would be produced / bought by the PCs and made available to the farmers at reasonable prices. The Government also proposes to support organic produce processing units, indicating forward linkage. They would be also eligible for tax rebates as applicable to village and cottage industries. Assistance would also be extended for installation of biogas plants.

8) Subsidies:
The most important subsidised, agricultural input in India is fertilizers for which the Government provides a direct subsidy in its budget. The subsidy on fertilizers rose from Rs. 4,389 crores in 1990-91 to Rs. 13,244 crores in 1999-2000, an increase of about 200 per cent in 9 years or at the rate of 13.0 percent per annum. (Sen and Bhalla, 2004, p: 275). Subsidy on urea during 2005-06 was estimated at Rs. 11,053.90 crores and on decontrolled phosphatic and potassic fertilizers at Rs. 5,200.00 crores (Economic Survey, GOI, 2005-2006).
There has been a continuous debate regarding the utility of these subsidies. Those who support fertilizer subsidies argue that they encourage their use, thus increasing yield and output. However, arguments in favour of removal of subsidy are that the subsidy is a financial burden on the exchequer and that these resources could have been better utilised by increasing public investment and infrastructure in agriculture. Also, it is argued that subsidies perpetuate inefficiencies in the domestic fertilizer industry. The benefit accruing to the farmer is also illusory as it has led to degradation of the soil on account of excessive chemicalisation and a skewed NPK ratio which is currently around 6.9 : 2.9 : 1.9, as against the optimum ratio of 4:2:1. This skewed fertilizer consumption pattern is a result of the high subsidies extended to urea producers (Kapila, 2002, p: 30). Subsidising fertilizers lead to their excessive use, which might reduce the use of some other input. The subsidy induced increase in inputs has not resulted in more efficient use of these inputs. The faulty pricing policies of different inputs have deprived agricultural producers the gains which could be obtained by more balanced use. (Vyas, 2002, p:70) Rationalisation of input prices will primarily impact on production costs of agriculture through more efficient use of inputs; the demand for inputs may go down without affecting output levels. (Vaidyanathan, 2002, p: 99) More importantly, fertilizers are no longer a new input, and hence removal of subsidies can be justified on that ground. Another important argument is that ‘though this subsidy is formally

Having briefly discussed the case for and against the fertilizer subsidy, we now turn to the more relevant issue of the possibility of providing subsidy support to organic inputs. There has always been an argument that the organic and chemical systems cannot be compared as they function on unequal ground, the input cost of chemical agriculture being artificially controlled. Critics of this policy argue that if even a fraction of the subsidy support and policy initiatives that have been given to chemical agriculture for the past 3-4 decades, had been given to organic farming, the comparison between the two systems would have been very different today. Hence, there is a strong case for providing subsidy support to the organic farming system. One of the arguments for withdrawal of subsidies on chemical fertilizers is also that it would reduce the excess demand for these fertilizers, and redirect it towards other inputs. This would rationalise the use of chemical fertilizers as well as increase the efficiency in their use. Thus, it is argued that either subsidies on chemical fertilizers should be withdrawn or organic farming should be given at least a part of the subsidy support to bring it on a somewhat comparable level with chemical farming.

The Aggregate Measure of Support (AMS) to Indian agriculture is still well below the de minimus of 10 per cent. The AMS is calculated as the sum of the product specific and product non-specific support, the former being significantly negative in the
Indian case. Moreover, input subsidies to resource poor farmers are exempt from the reduction commitments even now under the WTO provisions. Hence, theoretically, it is possible to provide subsidy support to organic farming to bring it at par with chemical agriculture.

In practice, however, it has several difficulties. First of all, it would further raise the subsidy bill and increase the burden on the exchequer. One suggestion could be that the subsidies on chemical fertilizers be gradually reduced, though not immediately. A sudden reduction would lead to raising the cost of production resulting in increase in food prices and hardships to farmers. However, a 10 to 15 per cent increase in farmers’ price is easily digestible (Vyas, 2002, p: 197). The resources thus saved, could be used to support organic farming. Another suggestion is that a fixed quantity of fertilizers, sufficient for 1 or 2 hectares may be subsidised for all farmers, if necessary through a system of input stamps requiring them to purchase the remaining quantities in the market at ongoing rates. (C.H.H. Rao, 2004, p: 27). However, this too would require the optimum doses for different crops, for different soils, in different regions and agro-climatic conditions to be worked out and the subsidies calculated accordingly, which might be a complicated task.

Very recently (May, 2007), the Government has decided to restructure the fertilizer subsidy regime to correct the highly skewed NPK ratio in the country. The existing product based subsidy regime will be replaced by a nutrient-based subsidy regime to promote a
balanced use of fertilizers across the country. Instead of only 15 fertilizer products currently entitled for government subsidy, all fertilizer products will become eligible for it, based on their nutrient content. Currently, there are around 150 fertilizer products in the market. Subsidy for each fertilizer will depend upon the amount of N, P, and K present in their formulations. The new move proposed by the Ministry of Agriculture already has the approval from the National Development Council Sub-Committee on Agriculture.

While such a policy might be useful in controlling the current highly skewed NPK ratio, it might also lead to excessive use of all the three macro nutrients, as also the micro-nutrients like zinc, iron, sulphur, etc.), besides raising the subsidy bill. In addition to this, it would reduce the initiative for turning to alternative agricultural practices. “If some of these (alternative) cost reducing technologies have not already been adopted extensively, it is primarily because of heavy farm subsidies which damper the incentives for cost reduction.” (C.H.H. Rao, 2002, p: 165)

Providing subsidies to organic farming is even a more complicated issue. This is due to a variety of factors, one basic factor being the definition of organic farming. Hence, there would be confusion in deciding which products would qualify for organic input subsidies.

However, even more important than this, is the fact, that very few organic inputs are currently marketed. Most of the organic inputs are
farm derived. The seeds used by organic farmers are also saved, indigenous, and local varieties. As discussed earlier, the inputs available in the market are not standardised or certified, and are not centrally available. **Hence, as the organic input industry itself is not developed enough, it is extremely difficult, if not impossible to subsidise these inputs.**

Subsidies / grants can be given to the producers of organic inputs, as in the case of bio-fertilizers in India. The Government implemented a central sector scheme called the National Project for the Development and Use of Bio-fertilizers (NPDB) in during the Ninth Plan for encouraging the production, distribution, and use of bio-fertilizers. The financial assistance is given in the form of a non-recurring grant-in-aid up to Rs 20 lakhs for setting up bio-fertilizer production units of 150 metric tones capacity. One-time grant-in-aid to the extent of 1.5 lakhs is provided for the establishment of Blue-Green Algae (BGA) centers to produce 30-40 tones of BGA per annum. Similarly, 10 lakhs assistance is being provided for creating production capacity of 75 metric tones capacity per annum.

However, a very valid suggestion would be to provide quality and subsidised, low cost certification to the organic farmers. As certification is also an input cost for selling a product as ‘organic’ and earning premium prices, a subsidy on certification would definitely help the farmers to reduce their input cost. This would also serve as an incentive for organic farming.
The other input subsidies include those on water, electricity, and irrigation. These inputs are common for both, chemical and organic farmers. It is argued that the rising subsidies on irrigation water from canals and on electricity for pumping water have caused severe deterioration of the systems due to the neglect of their maintenance, in addition to becoming fiscally unsustainable. They have also led to the highly wasteful use of canal water, caused ecological degradation from water-logging, salinity, and water pollution, excessive consumption of electricity, and overall withdrawal of groundwater, resulting in the shortage of drinking water in several parts of the country. Organic supporters have argued that these subsidies can be higher for organic farmers, as such a policy would serve as an incentive for using alternative eco-friendly technology.

As the subsidy burden is already fairly high, it may not be possible to provide higher subsidy for organic farmers on water, electricity, and irrigation. Moreover, even if it is fiscally possible, it is almost impossible in practice, as the organic farmers will have to be first identified as genuinely organic, and certified as being so. For this purpose, there must be standardisation and certification in the first place and a mechanism to check malpractices. Further, such a policy of cheap inputs may also lead to their excessive use and wastage. Hence, the common subsidy for all farmers may be continued or withdrawn depending upon the government policy, without distinguishing them as organic or chemical farmers.
9) **Support Price:**

The agricultural price policy includes the **Minimum Support Price** (MSP), **Procurement Price** (PP), a **buffer stock**, and the **public distribution system** (PDS). At the time of launching the HYVs programme, it was recognised that the farmers would be interested on a long term basis in replacement of their traditional seeds, only if it could be ensured that they will not be the losers if the yields increase substantially and markets crash. Therefore, the Government of India decided in 1964, to provide price incentive in the form of the MSP. The Government of India was equally concerned with the effort to maximise the procurement of food grains to meet the PDS requirements. In the seventies, the concept of announcing two prices, viz., the MSP before the sowing season and a PP at the time of arrivals in the *mandis* was given up. Since then, only MSPs are being announced (Thimmaiah and Rajan, 2004, pp: 66-68).

The MSP could be extended for the benefit of organic farmers. If the farmers are assured a fixed price for their produce, it would serve as an incentive for organic farming. The current high cost high subsidy regime could be rationalised and the resources, thus saved, could be used to support organic farmers. It can also be suggested that the support be restricted to a few important commodities. A **support price should be ideally offered to organic farmers during the first two years of the conversion period, when the output is vulnerable. Once the farm is converted fully, this support could be withdrawn. However, as discussed earlier, this system too would require a high degree of operational efficiency and**
coordination between the government, the local bureaucracy and farmers’ groups, which could be extremely difficult in practice. Hence, its success would depend upon the nature of its execution.

10) Crop Insurance:

The National Agricultural Insurance Scheme (NAIS) was implemented from the Rabi 1999-2000 season with the objective of providing financial support to the farmers in the event of failure of any of the notified crops as a result of natural calamities, pests and disease, and to help stabilise farm incomes, particularly in disaster years. The scheme is available to all the farmers (both loanee and non-loanee) irrespective of their size of holding. The premium rates are 3.5 per cent (of the sum assured) for bajra and oilseeds, and 2.5 per cent for other Kharif crops, 1.5 per cent for wheat, and 2 per cent for other rabi crops. Small and marginal farmers were entitled to a subsidy of 50 per cent of the premium, which was shared on 50:50 basis by the Central and State Governments. The subsidy on premium has gradually been phased out and at present, only 10 per cent subsidy is available to small and marginal farmers. (Economic Survey, GOI, 2005-06, p:167).

There have been doubts about the impact of the NAIS on farmers. Its coverage is very low, only 12 per cent of farmers and 10 per cent of area was covered in 2004. At present it covers 107 lakh farmers and an area of 173.3 lakh hectares across the country. (Economic Survey GOI, 2006-2007, p: 173) Generally the claims are much higher than the premium income. The cumulative claims (since Rabi 1999-2000
till date) are Rs. 7,506.6 crores as against cumulative premium of Rs. 2,565.7 crores. (Economic Survey, GOI, 2006-07, p: 173) Thus, it is also felt that the NAIS is a financial burden on the Government.

The crop insurance scheme could prove beneficial to organic farmers in the initial years of conversion, to compensate for a drop in the yield. It would reduce the risk in converting to organic farming. However, the premium could be a financial burden on the small farmers, making it difficult for them to avail of the benefit of crop insurance. A subsidy on the premium, particularly for small and medium farmers could be considered, because, as against the subsidy to the general farmers, the organic farmers would receive this subsidy only for the first two years. In the later years, the subsidy can be reduced, and completely withdrawn at the end of the conversion period.

Expanding crop insurance, however, would increase Government costs considerably. Moreover, the crux of the organic movement lies in reducing the costs, specifically cash outlays of the farmers, as much as possible. Hence, paying premium might defeat the very purpose of converting to organic. Furthermore, crop insurance for organic farmers would face the same problems of identification and implementation as discussed earlier.

Nevertheless, such a scheme should be seriously given a thought so that the choice of availing of it rests with the farmers.
11) **Agricultural Credit:**

During the Tenth Five Year Plan period, up to December 31, 2006, total flow of bank credit for agriculture and allied activities is Rs. 611,678.66 crores. Keeping in view the directive of the Government of India for doubling the flow of credit to the agricultural sector, NABARD advised the co-operative banks and RRBs to identify and bring into their fold such farmers, including defaulters, oral lessees, tenant farmers, share croppers, etc., who may have been outside the fold of the Kisan Credit Card (KCC) scheme, as also new farmers. The Government has decided that from Kharif 2006-07, farmers would receive crop loans up to a principal amount of Rs. 3 lakh at 7 per cent rate of interest. Concessional refinance to Co-operative Banks at 2.5 per cent per annum and to RRBs at 4.5 per cent per annum will also be provided through NABARD. (Economic Survey, GOI, 2006-07, pp 65, 172-175)

There is no specific policy of credit for organic farmers, although organic farming does get a mention in all the policy papers. However as general agricultural credit is expanded, it would also increase the scope of agricultural credit for organic farmers.

12) **Conversion / Transition Facilitation:**

As discussed earlier, conversion should be slow and in installments. There are many examples where the farmers have simply stopped applying nitrogen, and then found that the crops have failed. Such a conversion based on wrong and inadequate information, can lead to unprecedented losses and wrong notions about the success of organic
farming. Hence, scientific and localised information is very necessary, and should be made easily accessible to farmers interested in converting to organic farming. There is no general prototype or recipe which can be copied. Every locality is unique in terms of the environment and climatic conditions, under which it has to operate, as well as the resources. Hence, training programmes should also be carried out at the district level.

However, even if converted by using a proper scientific method suitable to local conditions, yields still tend to drop in the initial years of conversion till the soil gets adjusted to the new system. It is during this period that the farmers need financial support.

Schemes offering support to farmers during the conversion period already exist in Denmark, Sweden, Norway, Switzerland, and Germany. These schemes include financial assistance during the conversion period upto £ 300 / ha per year over a three year period in the case of Denmark. The Swedish Government offers a state advisory service for organic producers. The Swiss Government is paying farmers lump sums upto £ 2000 for education and training, and the adaptation and purchase of machinery.

The possibilities of financial support in the form of subsidies, MSP, crop insurance, have already been discussed. In Indian states like Andhra Pradesh, Karnataka, Kerala, Punjab and recently Maharashtra have been formulating special polices to promote organic farming in their states. The Karnataka Government has
proposed to bear a part of the conversion costs during the initial three years, by providing inputs. The Maharashtra Organic Farming Federation (MOFF, 2007) has recommended that the farmers should be asked to convert 20 per cent of their holding and increase the area by 20 per cent every year, so that the entire land will be converted to organic in five years. Financial incentives of Rs. 2,500/- per hectare per year for the first three years would facilitate the conversion.

13) Organic Exports:

Indian exports have, traditionally been primary in nature. With increasing awareness and stringent norms in importing countries, their food imports are becoming increasing restrictive. Organically grown produce may be the only solution available for India to export food products in the coming years. With a large area under default organic and cheap labour, a large scope exists for India in the export market. At present, India accounts for a negligible part of this organic food market, although it has made a mark in the case of some organic products such as organic tea and coffee, basmati rice, and spices. According to a recent survey undertaken by the International Federation of Organic Agriculture Movements (IFOAM) in 2006, the global market for organic products has reached a size of US $ 27.8 billion, in 2004, with Europe and America being the largest markets. By 2010, the organic food market is estimated to increase to US $ 100 billion. According to analysts, the organic market is likely to grow between 10 to 30 per cent annually in the coming years.
The total quantity of organic products exported in 2004-2005 was 8344 tonnes valued at Rs. 95.33 crores. The exported products include basmati rice, sesame, spices, walnuts, cashew nuts, tea, coffee, fruit pulp, and processed fruits. (MVIRDC World Trade Centre, Mumbai, 2006, pp: 45, 46) The Indian organic farming industry is currently in its nascent stage; however, a large scope exists for earning premium prices in the export market.

To begin with, areas and / or commodities could be earmarked for organic exports. There is need for educating the farmers about the export potential of organic products. Standardisation, certification, and labeling will play an important role in this context.

India is the pioneer and one of the leading producers of organic tea in the world. There is scope for organic exports in commodities like coffee, spices, rice (specially Joha rice produced in the NER) and fruits like grape, mango, banana, pineapple, passion fruit, and non-conventional vegetables like mushrooms, baby corn, asparagus, broccoli, and gherkins (EXIM BANK, 2003)

The major markets for organic exports are situated in the US, EU, and Japan. However, these countries do not recognize the Indian certification agencies, and hence certification, its high cost, and lengthy procedure, act as a deterrent in Indian organic exports.

The Japanese Agricultural Standards (JAS) regulations state that all plant based food products imported into Japan, and to be marketed as
‘organic’ should be certified according to the JAS framework, and that certification should be carried out by a JAS accredited agency. Similarly, the EEC Regulation (No. 2092/91) States that EU members can freely trade EU certified organic products among themselves. However, if non-EU countries want to export organic foods to the EU, these countries have to either get themselves registered on the ‘Third Country Register, or go through the ‘Import Authorisation Route’, both of which are extremely time consuming and complicated procedures. The US also allows imports of organic products if they are accredited by USDA accreditation agencies.

The high cost and lengthy procedures of organic certification for Indian products has for long been an impediment for Indian organic exports. However, with the US and Europe recognising Indian Certification bodies accredited by APEDA, in March 2006, exports from India are expected to increase by almost 50 per cent. The Karnataka Government has proposed to provide group certification for exports in case of small and marginal farmers, part of the costs being borne by Government against export documents.

Thus, a large potential is present for Indian organic exports, and hence, it is necessary to tap this potential, and the comparative advantage which India has over other countries in the form of cheap labour and default organic areas.
6.3.3 The Role Of Farmers’ Co-Operatives, Self-Help Groups, NGOs, And Media:

Promotion of farmers associations and self help groups is very essential for the success of organic farming. There are many voluntary associations of farmers, practising organic farming at different places. Such associations offer a platform to the farmers to share their experiences, express their problems, and find common solutions. Collective farming is also important, as it helps farmers to reduce costs, hike benefits, and increase their staying power.

A lot of work is also being done by NGOs in the field of organic farming. These NGOs provide technical help, guidance and training to farmers, and also provide them with inputs. Many NGOs also help the farmers in marketing their produce, by organising exhibitions, or identifying potential markets.

The media can also take up the responsibility of spreading awareness to both consumers and farmers, about the strengths and weaknesses of organic farming, to enable them to take proper decisions. The Government can also take up this responsibility through its Information and Broadcasting Ministry.
6.3.4 The Role of Research Institutes, Agricultural Universities, Training Programmes and Information Dissemination:

Organic farming, being knowledge intensive, requires considerable research in various aspects of the system. During the course of this study, it came across that although a lot of research is being done in organic farming; it still does not cover the vast scope that the system offers. A large area still remains unexplored. Government funded agricultural institutes and universities should direct themselves towards these areas. A huge traditional knowledge bank exists in the form of old generation farmers. This should be first documented so that it is not lost with the times. It should then be tested for its validity in the current context and where necessary, modified to suit the present situation. Similarly, many farmers know or have developed a host of alternative technologies to deal with fertility of soil, pests, and diseases, such innovation techniques should also be taken up for study.

It is generally observed that there is poor co-ordination between research institutes, government bodies, and farmers. This link has to be strengthened so that scientific knowledge does not remain locked up in scientific journals alone, and is passed down to those people who are going to facilitate its practical application. For this purpose, it is necessary to have training programmes in organic farming for the farmers, where they can learn about different methods of pest, nutrient, and fertility management, as well as get market information. One such effort has been made by the
organically progressive district of Dhule, in Maharashtra, where the Agricultural Department and Dhule Agricultural University devised a programme of IPM in consultation with the farmers. Dhule’s cotton farmers have also successfully tied up with the Mhow-based Bio-Re, which supplied cotton to the Swiss Garment Company Reime AG. The district administration also holds an annual organic produce fair in Dhule. Such integrated programmes must be spread to different areas, where farmers are already initiated towards organic farming; and where they intend to convert but do not have the necessary technical know-how.

In addition to the technical know-how it is also necessary that the farmers are taught to maintain financial accounts, which would give them a precise idea of their business. Most of the farmers who were interviewed do not maintain any such accounts. Lastly, model organic farms should be set up at agricultural universities for farmers to see and study. Setting up of organic schools at the village level, or introducing organic farming at the school level would also help in this context.

6.3.5 Future Research Areas:
As this subject is multi-dimensional and inter-disciplinary, research needs exist on several fronts. As far as agricultural research is concerned, it is necessary to study the interactions between different components, rather than studying them individually, as organic farming, inherently is a holistic system. Some of the areas for agricultural research could be:
• **Plant Breeding** – So far organic farming depends upon old crop varieties. Focused organic plant breeding could lead to major improvements in organic production.

• **Bio-fertilizers and pesticides** – These are seen to be effective in most cases, and further research would enable them to give higher results.

• **Multiple cropping and Inter-cropping** – Non-traditional and additional crops could be tested for the purpose of disease and pest management, under the practice of multiple cropping and inter-cropping.

• **Composting techniques** could be further developed.

• **Models should be developed for specific locations** and agro-climatic conditions, as a model successful in one condition, may not necessarily be successful elsewhere.

Economic research should focus upon:

• **Cost – Benefit Analyses** for the natural resource base and assessment of environmental impact.

• **Marketing of organic products**, demands both domestic and foreign, and marketing channels.

• **Future of premium prices** and farm incomes if supply of certified organic products increase.

• **Projection of impact of converting to organic farming** in the future, at the macro level.
6.4 **CONCLUSION:**

Organic farming has attracted great recognition, particularly in the past two decades, as a valid and viable method of farming. Its ability to meet at least some of the most important agricultural and environmental policy objectives has been accepted in most countries across the world. However, still a lot of areas need to be developed and explored. Policy support would prove helpful in this sphere. Ideological support is also essential. Organic farming is a dynamic system which, looking at the current worldwide following, is sure to evolve in the coming years. It certainly has a future of its own and a significant role to play in the agro-economic development across the world in the coming decades.

According to Dahama, the technological and economic feasibility of organic farming will certainly influence its large scale adoption and promotion. Coupled with this, the need for alternative farming systems in view of emerging environmental problems and energy constraints will have a bearing on the agricultural structure in general, and adoption of organic practices in particular. However, awareness about the degradation of the earth’s natural resources at an alarming rate and man’s quest to survive and keep his planet green and healthy should go in favour of worldwide adoption of organic farming systems. (Dahama, 2003, p: 261)