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ORGANIC FARMING: PRINCIPLES & STRATEGIES FOR PROMOTION & PRODUCTION

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Abstract

Industrial mass-production methods have contributed to food losing the high quality, freshness and great taste that only small-scale sustainable practices can produce. The time has come when we should be dedicated to preserve the environment by providing the consumers with cost-effective, state-of-the-art, organic growing supplies and the information and tools needed to apply them. We should strive to provide growers at every level, from home gardeners to commercial farmers, with great service, low prices and the best selection of quality products available. The researchers should focus on “organic” and continue to participate in outreach programs to promote the benefits of organic growing. On the one hand, organic gardening includes the practical side of growing fruit and vegetables. But on the other hand, it relishes the ethical side of gardening, where people are concerned with global warming, the water crisis, wildlife habitat destruction and loss of biodiversity. The present write up will describe that the organic garden can solve these concerns with practical measures, such as water tanks, utilising grey water, drip irrigation, mulching, recycling of kitchen scraps and providing a suitable habitat for wildlife.

Keywords: Environment, organic, farming, biodiversity.

Introduction

India had developed a vast and rich traditional agricultural knowledge since ancient times and presently finding solutions to problems created by over use of agrochemicals. Today's modern farming is not sustainable in consonance with economics, ecology, equity, energy and socio-cultural dimensions. Indiscriminate use of chemical fertilizers, weedicides and pesticides has resulted in various environmental and health hazards along with socio-economic problems.

Chemical base farming system is no more beneficial as it requires high input and low return, resulting migration of youth from rural area to urban area in search of other jobs. Besides that cultivable area and forest land is shrinking day by day and become biggest threat to habitat of animals and birds. Though agricultural production has continued to increase, but productivity rate per unit area has started to decline.

Traditional agricultural practices, which are, based on natural and organic methods of farming offer several effective, feasible and cost effective solutions to most of the basic problems being faced in conventional farming system. There is also need to conserve our traditional seed, some of which have drought resistant properties and resistant to different pest and diseases. Many long term studies have reported that soil under organic farming conditions had lower bulk density, higher water holding capacity, higher microbial biomass carbon and nitrogen and higher soil respiration activities compared to the conventional farms. This indicates that sufficiently higher amounts of nutrients are made available to the crops due to enhanced microbial activity under organic farming.

Definitions of Organic Farming

Among the most stringent definitions is that of **US Department of Agriculture**, which defined Organic Farming as, “A system that is designed and mailed to produce to agricultural products by the use of methods, and substances that maintain the integrity of organic agricultural products until they reach the consumer”.

This is accomplished by using, where possible, cultural, biological and mechanical methods, as oppose to use substances to fulfill any specific fluctuations within the system so as to maintain long term biological activity, ensure effective management, recycle waste to return nutrients to the land, provides attentive cares for farm animals and handle the agricultural products without the use of extraneous synthetic additives or processing in accordance with the act and regulations in this part.

According to Funtilana (1990), “Organic Farming is giving back to the nature what is taken from it”. It is not mere non-chemicalizm in agriculture; it is a system of farming based on integral relationship. Therefore, one should know the relationship among soil, water, plant and micro flora and overall relationship between plants animal kingdom.

Concept of Organic Farming

The basic concepts behind Organic farming are:

1. It concentrates on building up the biological fertility of the soil so that the crops take the nutrients they need from the steady turnover within the soil nutrients produced in this way are released in harmony with the needs of the plants.
2. Control of pests, diseases, and weeds is achieved largely by the development of an ecological balance within the system and by the use of bio-pesticides and various cultural techniques such as crop rotation, mixed cropping, and cultivation.
3. Organic farmers recycle all wastes and manures within a farm but the export of the products from the farm results in a steady drain of nutrients.
4. In a situation, where conservation of energy and resources is considered to be important, community or country would make every effort to recycle all urban and industrial wastes back to agriculture and thus the system would be only be a small inputs of new resources to “top up” soil fertility.

Table 1.1 Benefits of organic farming

Parameter	Potential benefits
Agriculture	Increased diversity, long-term soil fertility, high food quality, reduced pest/disease, self-reliant production system, stable production
Environments	Reduced pollution, reduced dependence on non-renewable resources, negligible soil erosion, wildlife protection, resilient agro-ecosystem, compatibility of production with environment
Social conditions	Improved health, better education, stronger community, reduced rural migration, gender equality, increase employment, good quality work
Economic conditions	Stronger local economy, self-reliant economy, income security, increase returns, reduced cash investment, low risk
Organizational/institutional	Cohesiveness, stability, democratic organizations, enhanced capacity

Principles of Organic Farming

The International Federation of Organic Agriculture Movements (IFOAM) has formulated four broad principles of organic farming, which are the basic roots for organic agriculture growth and development in a global context. These principles of organic agriculture serve to inspire the organic movement in its full diversity. The principles are to be used as a whole, which are composed as ethical principles to inspire action. They are:

- Principle of Health
- Principle of Ecology
- Principle of Fairness
- Principle of Care

Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help to sustain them. Organic agriculture should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings. Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. It should prevent significant risks by adopting appropriate technologies and rejecting unpredictable ones, such as genetic engineering.

Details of Crop Production for conversion to Organic systems:

1. Soil and Water Conservation

- Relevant measures should be taken to prevent soil erosion, conservation of water, prevent both excess & improper use of water & pollution of ground as well as surface water.
- Relevant measures should be taken to prevent salination.
- Cleaning of land by burning of organic matter should be restricted to the absolute minimum.

2. Choice of crops & variety

- Seeds & planting materials should be from traditional / certified organic production.
- Seed treatment should be made with permissible products
- When certified organic seed not available, chemically untreated seed conventional materials may be used.
- New crop seed & plant material treated with synthetic pesticides, chemicals, related or micro waved can only be allowed in regions where organic agriculture is in the early stage.
- Use of genetically engineered seeds, transgenic plants should not allowed.

3. Crop rotations

- Certifying programmes should set minimum standards for crop rotations on arable land, taking into account the nature of the crop, presence of weeds & local conditions.

4. Manurial Policy

- Manurial policy should include green manure, leaf litter & Vermicomposting.
- Manure containing human faeces or untreated sewage should not be used on vegetables produced for human consumption.
- Any organic wastes should be applied in their natural composition & should not be rendered more soluble by chemical treatments.
- All the materials should be in accordance with the standards. All synthetic nitrogenous fertilizers including urea should be excluded.
- Organic farm should have manurial policy to include inputs based on microbial, plants or animal origin, provided they do not have adverse effects on the soil and local ecology.

5. Pests, diseases and weed management

- Products of traditional nature, preferably prepared at the farm from local plants, animals and microorganisms should be used
- Both physical and thermic methods are permitted. Thermic sterilization of soil is allowed to combat both pests & diseases, whenever necessary.
- All the synthetic herbicides, fungicides, pesticides should be strictly prohibited.

Evidences suggest that food items produced using alternative sources of crop nutrients (i.e. without fertilizers) foods were more nutritious than those produced conventionally. A study conducted by Campden Research Station in 2008 (Analytical survey of the Nutritional Composition of organically Grown Fruits and Vegetables) revealed that there are differences in nutritional status between organic and non-organic produce. The results are summarized in table 1.2

Table 1.2 Differences in nutritional status between Organic and non-organic produce

Product	Nutrients in organic food per 100 g	Nutrients in chemically produced food per 100 g
Apples		
Sugars (total)	8.8 g	9.5 g
Vitamin C	21.6 mg	19.3 mg
Tomatoes after dehydration		
Sugars (total)	63.4 g	70.0 g
Tomatoes		
Vitamin C	21.8 mg	18.0 mg
Vitamin A	4.7 mg	3.5 mg
Tomatoes after dehydration		
Vitamin C	349 mg	288 mg
Vitamin A	7.3 mg	5.5 mg
Carrots		
Glucose	0.9 g	1.3 g
Potassium	269 mg	217 mg
Carrots after dehydration		
Sugars (total)	42.8 g	52.8 g
Potatoes		
Sugars (total)	0.7 g	0.8 g
Vitamin C	13.5 mg	17.8 mg
Potassium	329 mg	370 mg
Zinc	310 g	260 g
Potatoes after hydration		
Sucrose	1.0 g	2.4 g
Fructose	1.2 g	0.7 g
Glucose	2.0 g	1.2 g
Iron	5.7 mg	4.7 mg
Calcium	64.0 mg	56.4 mg
Zinc	1810 g	1350 g

Strategies for promotion of Organic Farming in India

Some strategies have been made for success of Organic Farming in India, which must be kept in the mind. They are as follows:

- Establishment of center of excellence and countrywide network for research on Organic Farming.
- Documentations of available indigenous technological knowledge (ITK) and other technologies developed by various public sector research centres/NGO/ individuals on different aspects of Organic Farming in India.
- Introduction of core courses on the concepts and practices in Organic Farming in the curriculum of under graduate and post-graduate degree programmes at different SAUs and other Agricultural Institutes.
- Standardizations of mechanisms or methods for suitability or judging of Organic Farming practices.
- Formulation of appropriate package of practices of productions of different crops under Organic Farming Systems.
- Export groups, comprising of eminent agricultural as well as social scientists and progressive farmers may be constituted for visiting farms of successful farmers associated with organic farming practices.
- Dissemination of knowledge on Organic Farming through Krishi Vigyan Kendra (KVK), field demonstrations, TV programmes and other suitable mass media etc.

Conclusion

Organic Farming has the twin objective of the system sustainable and environmentally sensitive. In order to achieve these two goals, it has developed some rules and standards which must be strictly adhere to. There is very little scope for change and flexibility. Thus, the Organic Farming does not require best use of options available rather the best use of options that have been approved. These options are usually more complex and less effective than the conventional system. With ever increasing population having huge requirements of vegetables and meager availability of organic resources, pure organic farming is not possible in India; rather some specific area can be diverted to organic farming for export of high quality vegetable crops. Thus, as a whole under Indian condition, only partial switching to Organic Farming of export oriented

vegetable crops can be possible in recent times. In India, adoption of Pure Organic Farming is possible partially, more specifically crops having high export potential in International markets .On the other hand, full adoption of Integrated Green Revolution Farming, another option of Organic Farming can be possible to a large extent, where, the basic trends of the green revolution such as intensive use of external inputs, increased irrigation, development of high yielding and hybrid varieties as well as mechanizations of labour are retained with much greater efficiency on the use of these inputs with limited damage to the environment and human health.

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