

# Organic Farming – Best Systems for a Survival Farm

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## Introduction

Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, genetically modified organisms and livestock food additives. To the maximum extent possible organic farming system rely upon crop rotations, use of crop residues, animal manures, legumes, green manures, off farm organic wastes, biofertilizers, mechanical cultivation, mineral bearing rocks and aspects of biological control to maintain soil productivity and tilth to supply plant nutrients and to control insect, weeds and other pests.

Organic methods can increase farm productivity, repair decades of environmental damage and knit small farm families into more sustainable distribution networks leading to improved food security if they organize themselves in production, certification and marketing. During last few years an increasing number of farmers have shown lack of interest in farming and the people who used to cultivate are migrating to other areas. Organic farming is one way to promote either self-sufficiency or food security. Use of massive inputs of chemical fertilizers and toxic pesticides poisons the land and water heavily. The after-effects of this are severe environmental consequences, including loss of topsoil, decrease in soil fertility, surface and ground water contamination and loss of genetic diversity.

Organic farming which is a holistic production management system that promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity is hence important. Many studies have shown that organic farming methods can produce even higher yields than conventional methods. Significant difference in soil health indicators such as nitrogen mineralization potential and microbial abundance and diversity, which were higher in the organic farms can also be seen. The increased soil health in organic farms also resulted in considerably lower insect and disease incidence. The emphasis on small-scale integrated farming systems has the potential to revitalize rural areas and their economies.

## NEED :

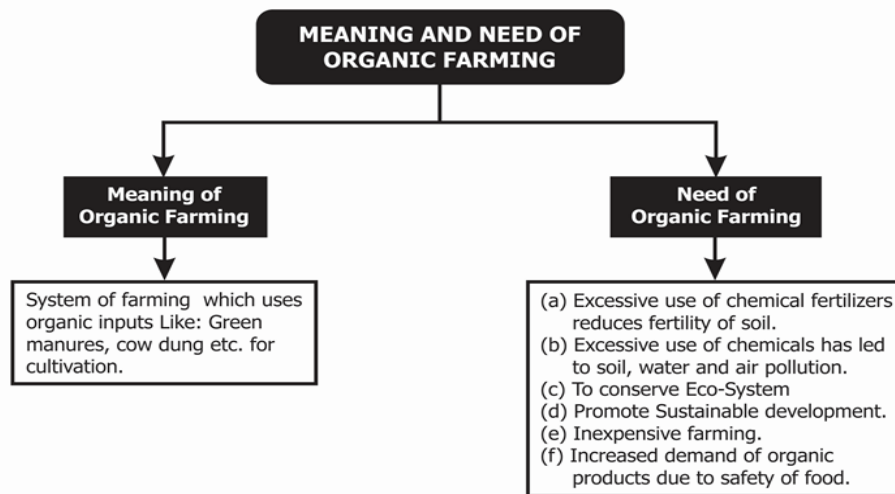
### Meaning and Importance of Organic Farming

#### Meaning of organic farming

System of farming that uses organic inputs like green manures, cow dung, etc., for cultivation.

#### Need of organic farming

- Excessive use of chemical fertilisers reduces the fertility of soil.
- Excessive use of chemicals has led to soil, water, and air pollution.
- To conserve ecosystem.
- To promote sustainable development.
- Inexpensive farming.
- Increased demand of organic products due to safety of food.



## Principle and Types

### 1 -Principle 1: Health

“To sustain and enhance the health of soil, plant, animal, humans and planet as one and indivisible”(IFOAM, 2006).

According to this, there is a health chain from soils that produce healthy crops, fostering health of animals and humans etc. Originally, this way of thinking was typical for Balfour (1943) .

Howard (1940), saying that a living soil in particular is a necessary condition for healthy plant growth and for humans. However, soil health (A) does not necessarily provide a guarantee of crop health (B) or animal or human health (C, D) and planet health (E). There is simply no imperative logic that A leads to B and finally to E, although we would like to believe so. Even if crops greatly benefit from fertile and healthy soil, soil conditions are not the only determining factor for crop health. Other factors can be of greater importance, such as weather and climate, plant protection against non-soil borne diseases through NPK fertilisers (Reuveni and Reuveni, 1998), damage through animals and pests, formation of natural toxins in crops etc. Similarly, healthy crops do not automatically guarantee good health of the consuming organisms. For instance, the micronutrient requirements of animals or humans can be much larger than the requirements and uptake by crops (McDowell, 2003). In simple terms, the nutritional composition of a healthy crop may not be adapted to the consuming organism. The ‘chain’ conclusions that perfect conditions in soil finally lead to a healthy planet are highly questionable.

### Principle 2 - Ecology<sup>12</sup>

“To base organic farming on living ecological systems and cycles, work with them, emulate them and help sustain them”(IFOAM, 2006).

In the full IFOAM text it is explained that “production is based on ecological processes and recycling. Organic farming should fit the cycles and ecological balance in nature”. In other words, ecological systems and cycles should serve as a prototype for organic agriculture. This view is similar to that proposed by Rusch, who wanted to practise agricultural methods following processes observed in nature. However, both organic and conventional agricultural systems are man-made and not naturally occurring. In fact, the cultivation of natural ecosystems such as forests, wetlands, grassland etc. into agricultural land is a drastic conversion. Agriculture means that crops are sown and harvested, weeds are controlled, soils are tilled, and animal manures are collected and applied.

Furthermore, the same ecological processes and cycles exist and take place in organic and conventional agricultural systems.

Ecological processes and cycles are proposed to serve as a model providing guidelines for how to treat nature. However, the purpose of agriculture is not to emulate ecological processes but to use and take care of nature for the purpose of food production. Ecological processes simply follow or react to any prevailing conditions, independent of the cause. For example, application of manure to soil increases microbial activity and nitrogen processes in soil to levels much higher than those

occurring in undisturbed nature. Our task is to protect the soil from erosion and pollution, to maintain its fertility by application of necessary nutrients, and to manage agro-ecosystems so that nutrient losses are minimised. If we do that, soil processes will continue to work according to these conditions.

Many unnatural measures can be found within organic agriculture. Various industrial wastes (e.g. slag, vinasse, meat and bone meal from abattoir offal) that are not naturally occurring are applied to soil. On the other hand, recycling of toilet wastes to organically managed soils is not allowed, see Chapter 5 of this book (Kirchmann et al., 2008b). Man-made crop varieties and not wild types are grown. Machinery is powered by fossil fuels and animal or man power is very seldom used

### Principle 3 - Fairness

“Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities” (IFOAM, 2006).

The principle of fairness adds new aims to organic agriculture, not explicitly addressed by the pioneers, such as respect, justice, eradication of poverty, animal welfare, equitable systems for distribution and trade, as well as social costs. The emphasis on these aspects is, without doubt, commendable and definitely wanted within society. Still, the question is whether organic agriculture is the best way to achieve these aims.

Furthermore, supply and quality of food is addressed “Organic farming should contribute to a sufficient supply of good quality food and other products”. Again, sufficient supply of high quality food and other products is a general aim for all agriculture. However, organic agriculture produces much less food per area than conventional agriculture and thus requires more land to be used for cropping, see Chapter 3 of this book (Kirchmann et al., 2008a). Organic products can also be

affected by pests, which lower the quality. On the other hand, growth of the human population presupposes that much more food has to be produced in the future. Lal (2006) estimated that it is necessary to increase world-wide average cereal yields from 2.64 Mg ha<sup>-1</sup> (in the year 2000) to at least 4.30 Mg ha<sup>-1</sup> (by 2050).

Another topic addressed is animal welfare –“animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behaviour and well-being”. We are convinced that humans are obliged to show kindness and respect to livestock, as well as being morally responsible for their health and well-being. However, ‘natural behaviour’ is not always wanted. Humans have kept livestock for many years, resulting in a selection of animals with 13 behaviours that differ from the wild species. Natural behaviour cannot be the only guideline for livestock management because even domesticated animals can do harm by victimisation, fighting and cannibalism. It is important to keep animals in such a way that the special requirements of each species are fulfilled and that destructive forms of behaviour can be prevented.

### Principle 4 - Care

“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”. Caring for the environment is a basic principle necessary for its sustainability in order to provide humans with wellbeing, food and other essentials. In most societies, there is consensus to care for the environment and the responsibility of humans towards nature is clear – to respect, to utilise and to care.

It is the explanation of how to care for the environment that is remarkable in the IFOAM document, which states that “Science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound. However, scientific knowledge alone is not sufficient. Practical experience, accumulated wisdom and traditional and indigenous knowledge offer valid solutions, tested by time”.

The problem with this explanation is that any kind of tradition including occult practices etc. Are regarded as being of similar value to scientific results. For example, use of biodynamic compounds is explicitly accepted as a valid solution.

To make it very clear, our criticism is not based on a negative attitude towards accumulated wisdom or traditional and indigenous knowledge as such - knowledge gained this way can be very valuable - but on the fact that this knowledge can be both useful and of disadvantage for the sustainability of agro-ecosystems. It may also be a barrier to other well-founded practices

## Types of Organic Farming

Organic farming is divided into two types, namely:

1. Integrated organic farming
2. Pure organic farming

Pure organic farming means avoiding all unnatural chemicals. In this process of farming, all the fertilisers and pesticides are obtained from natural sources such as bone meal or blood meal.

Integrated organic farming includes the integration of pest management and nutrients management to achieve ecological requirements and demands.

## Organic Farming: Concept

Organic farming can be defined as an agricultural process that uses biological fertilisers and pest control acquired from animal or plant waste. Organic farming was actually initiated as an answer to the environmental sufferings caused by the use of chemical pesticides and synthetic fertilisers. In other words, organic farming is a new system of farming or agriculture that repairs, maintains, and improves the ecological balance.

## Advantages of Organic Farming

**Economical:** In organic farming, no expensive fertilisers, pesticides, or HYV seeds are required for the plantation of crops. Therefore, there is no extra expense.

**Good return on Investment:** With the usage of cheaper and local inputs, a farmer can make a good return on investment.

**High demand:** There is a huge demand for organic products in India and across the globe, which generates more income through export.

**Nutritional:** As compared to chemical and fertiliser-utilised products, organic products are more nutritional, tasty, and good for health.

**Environment-friendly:** The farming of organic products is free of chemicals and fertilisers, so it does not harm the environment.

## Disadvantages of Organic Farming

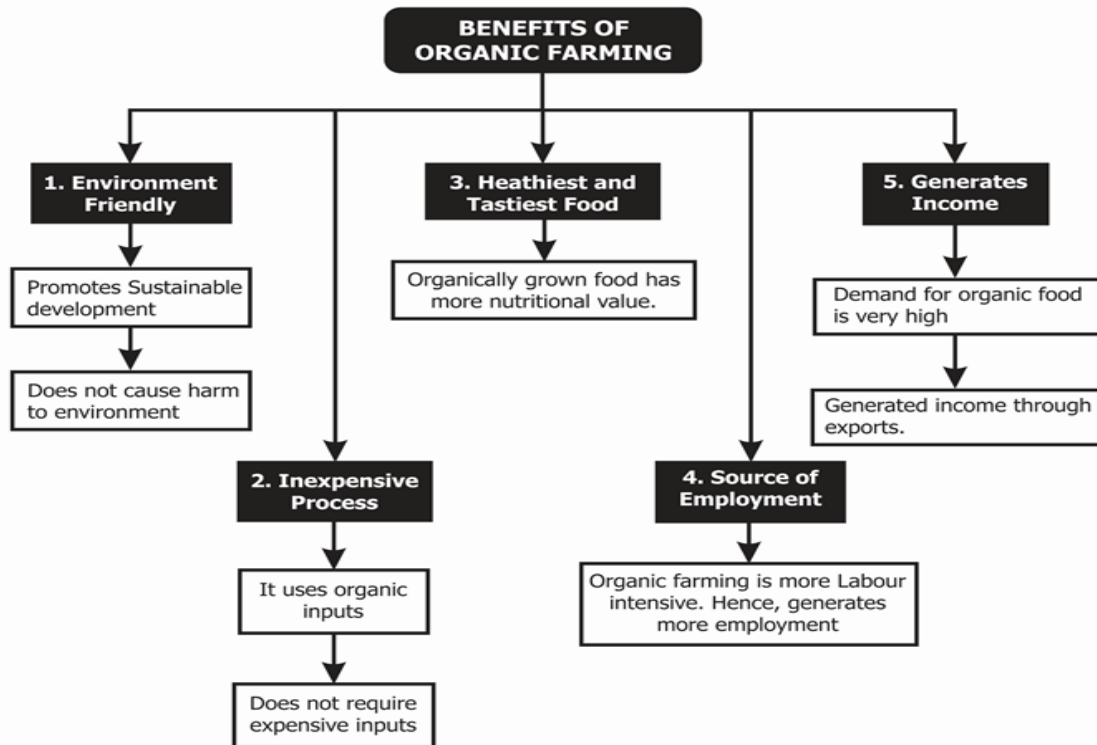
**Incompetent:** The major issue of organic farming is the lack of inadequate infrastructure and marketing of the product.

**Less production:** The products obtained through organic farming are less in the initial years as compared to that in chemical products. So, farmers find it difficult to accommodate large-scale production.

**Shorter shelf life:** Organic products have more flaws and a shorter shelf life than that of chemical products.

**Limited production:** Off-season crops are limited and have fewer options in organic farming.

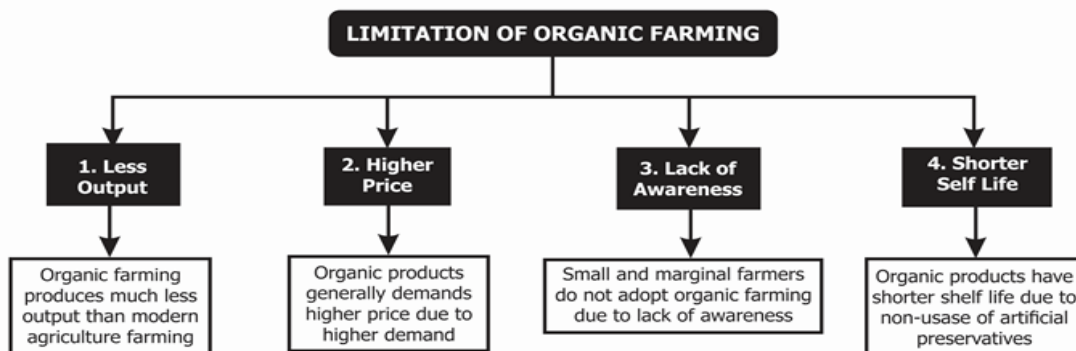
### Benefits of Organic Farming



### Benefits of organic farming

- Environment-friendly.
- Promotes sustainable development.
- Healthy and tasty food.
- Inexpensive process.
- It uses organic inputs.
- Generates income.
- Generates income through exports.
- Source of employment.
- Organic farming is more labour intensive. Hence, it generates more employment.

### Limitations of Organic Farming



### Limitations of organic farming

- Less output.
- Higher price.
- The lack of awareness.
- Organic products generally demand a higher price due to a higher demand.
- Shorter shelf life.
- Organic products have a shorter shelf life due to the absence of artificial preservatives.

## The relevance of Organic Farming



### Relevance of organic farming in India

- High nutritional value.
- Maximum profit.
- Employment opportunity.

### References :

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"A form of production (also organic farming, ecological farming, ecological-biological farming, ecological agriculture, alternative agriculture) for the production of food and other agricultural products."