

# Organic Farming in India

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## Abstract :

1. Organic farming is a production system that integrates site specific cultural, biological and mechanical practices designed to foster the cycling of resources, ecological balance and biodiversity (USDA, National Organic Programmers -2002)
2. **It is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives.**

To the maximum extent feasible organic systems rely upon crop rotations, crop residues, animal manures, legumes, green manures, off farm organic wastes, mechanical cultivation, mineral bearing rocks and aspects of biological pest control to maintain the soil productivity and tilth, to supply the plant nutrients and to control insects, weeds and other pests .

**Keywords :** Organic Farming , Conventional Farming , Biodiversity , Biocontrol , Soil Fertility , Sustainable Agriculture .

## Introduction :

Organic farming refers to the agricultural systems used to produce food and fibre. Organic

farming systems do not use toxic chemical pesticides or fertilizers. Instead, they are based on the development of biological diversity and the maintenance and replenishment of soil fertility. Organic foods are minimally processed to maintain the integrity of the food without artificial ingredients, preservatives or irradiation. Organic farming describes two major aspects of alternative agriculture *viz.*,

1. The substitution of manures and other organic matter for inorganic fertilizers.
2. The use of biological pest control instead of chemical pest control.

**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 steady turnover within the soil nutrients produced in this way and are released in harmony with the need 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. Enhancement of the environment in such a way that wild life flourishes.
5. In a situation where conservation of energy and resources is considered to be important community or country would make every effort to recycle to all urban and industrial wastes back to agriculture

and thus the system would be requiring only a small inputs of new resources to “Top Up” soil fertility.

### OVERALL PRINCIPLES / AIMS / OBJECTIVES OF ORGANIC FARMING

1. To produce food of high nutritional quality.
2. To interact in a constructive and life enhancing way with natural system and cycles.
3. To encourage and enhance biological cycles within the farming system.
4. To maintain the soil fertility.
5. To avoid all forms of pollution that may result from agricultural techniques.
6. To help in the conservation of soil and water.
7. To work with material and substances, which can be reused or recycled.
8. To maintain the genetic diversity.
9. To promote healthy use and proper care of water, water resources and all life therein.
10. To consider the wider, social and ecological impact of the farming system.

The **International Federation for Organic Agriculture Movement’s (IFOAM) definition** of Organic agriculture is based on:

1. The principle of health
2. The principle of ecology
3. The principle of fairness and
4. The principle of care



#### 1..Principle of health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.

#### 2.Principle of ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.

#### 3.Principle of fairness

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.

#### 4.Principle of 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.

### NEED & SCOPE OF ORGANIC FARMING

1. -Increase in awareness and health consciousness
2. -Global consumers are increasingly looking for organic food, which is considered safe, and hazard free.
3. -The global prices of organic food are more lucrative and remunerative.

4. -The potential of organic farming is signified by the fact that the farm sector has abundant organic nutrient resources like livestock, water, crop residue, aquatic weeds, forest litter, urban, rural solid wastes and agro industries, bio-products.
5. -India offers tremendous scope for organic farming as it has local market potential for organic products.

## HISTORY OF ORGANIC FARMING

1. Traditional farming (of many kinds) was the original type of agriculture, and has been practiced for thousands of years. Forest gardening, a traditional food production system that dates from prehistoric times, is thought to be the world's oldest and most resilient agro ecosystem.
2. Artificial fertilizers had been created during the 18th century, initially with superphosphates and then ammonia-based fertilizers mass-produced using the Haber-Bosch process developed during World War I. These early fertilizers were cheap, powerful, and easy to transport in bulk. Similar advances occurred in chemical pesticides in the 1940s, leading to the decade being referred to as the 'pesticide era'. But these new agricultural techniques, while beneficial in the short term, had serious longer term side effects such as soil compaction, soil erosion, and declines in overall soil fertility, along with health concerns about toxic chemicals entering the food supply.
3. **Soil biology scientists** began in the late 1800s and early 1900s to develop theories on how new advancements in biological science could be used in

agriculture as a way to remedy these side effects, while still maintaining higher production.

4. In Central Europe **Rudolf Steiner**, whose *Lectures on Agriculture* were published in 1925 created biodynamic agriculture, an early version of what we now call organic agriculture. Steiner was motivated by spiritual rather than scientific considerations.
5. In the late 1930s and early 1940s **Sir Albert Howard** and his wife Gabrielle Howard, both accomplished botanists, developed organic agriculture. The Howards were influenced by their experiences with traditional farming methods in India, biodynamic, and their formal scientific education. **Sir Albert Howard** is widely considered the "**father of organic farming**", because he was the first to apply scientific knowledge and principles to these various traditional and more natural methods
6. In the United States another founder of organic agriculture was **J.I. Rodale**. In the 1940s he founded both a working organic farm for trials and experimentation, The Rodale Institute, and founded the Rodale Press to teach and advocate organic to the wider public.
7. Further work was done by **Lady Eve Balfour** in the United Kingdom, and many others across the world.
8. There is some controversy on where the term "organic" as it applies to agriculture first derived. One side claims term 'organic agriculture' was coined by **Lord Northbourne**, an agriculturalist influenced by Steiner's biodynamic approach, in 1940.
9. Increasing environmental awareness in the general population in modern times has transformed the originally supply-driven organic movement to a demand-driven one. Premium prices and some government subsidies attracted farmers. In the developing world, many

producers farm according to traditional methods that are comparable to organic farming, but not certified, and that may not include the latest scientific advancements in organic agriculture. In other cases, farmers in the developing world have converted to modern organic methods for economic reasons

**APIGR:** Association for Propagation of Indigenous Genetic Resources Oct-1984 at Wardha

**IFOAM:** International Federation of Organic Agriculture Movement 1972

**APEDA:** Agricultural and Processed Food Products Export Development Authority-  
**NPOP** (National Programme for Organic Production) in 2001

**NSC :** National Steering Committee

**NAAS :** National Academy of Agricultural Science

**IOAS:** International Organic Accreditation Service

**OATZ :** Organic Agriculture Trade Zone

**OARD :** Organic Agriculture in Rural Development .

Logo “**India Organic**” was released on 26 th july,2002 to support the NPOP

Aerobic compost by **Howards 1929**

Anarobiccompost by **Acharya in 1934**

**NADEP** compost 1080

**Sir Albert Howard :** father of organic farming

## **ORGANIC FARMING IN INDIA : RELEVANCE IN PRESENT CONTEXT**

- In India, only 30% of total cultivable area is covered with fertilizer, where irrigation facilities are available and in the remaining 70% of arable land, which is mainly rainfed, negligible amount of fertilizers is being used. Farmers in these areas often use organic manure as a source of nutrients are readily available either in their own farm or in their locality.
- The North Eastern Hills of India provides considerable opportunity (18 million hectare) for organic farming due to least utilization of chemical inputs, which can be exploited for organic production.
- India is an exporting country and does not import any organic products. The main market for exported products is the European union. Recently India has applied to be included on the “EU-Third-Country-List”, another growing market is USA.
- There has been plenty of policy emphasis on organic farming and trade in the recent years in India.
- The 10<sup>th</sup> five-year plan emphasizes promotion and encouragement to organic farming in India with the use of organic waste, IPM and INM.
- Even 9<sup>th</sup> five-year plan had emphasized the promotion of organic produce in plantation crops, spices and condiments with the use of organic & bio-inputs.
- There are many states and private agencies involved in promotion of organic farming in India. These include-various ministries and department of the government at the central and state levels such as;
  - Universities and Research centers
  - Non Govt. organizations (NGO)
  - Eco farms

- Certification bodies like INDOCERT, ECOCERT, SKAL and APOF etc.

The central and state governments have also identified *Agri-Export Zone* for agricultural exports in general and organic products in some states:

- ✓ In Uttar Pradesh and Uttaranchal the Diversified Agriculture Support Project (DASP) is promoted for organic farming.
- ✓ In Bangalore & Nilgiris; with 50 outlets in south India helps for supply the organic products from small growers.
- ✓ IRFT (International Recourses for Fairer Trade) based in Mumbai, procures organic cotton and agro products to sell them to Indian & foreign buyers to help the rural poors.
- ✓ Ion Exchange, Mumbai, a private company is engaged for export and domestic marketing of organic products in India.
- ✓ In Himachal Pradesh; the net incomes per hectare from organic farming was found to be 2-3 times higher both in case of maize and wheat due to higher production and also for higher price were obtained by organic produce.
- ✓ In Haryana; net returns was higher (2-3 times) in basmati rice, soybeans, arhar and wheat because of 25 to 30 % price premium on organic produce and lower cost of production and marketing.
- ✓ In Maharashtra; popularization of organic cotton production was due to high cost benefit ratio of organic cotton 1:1.63 as against 1:1.47 for conventional cotton.
- ✓ In Gujarat; organic production of chickoo, banana and coconut had higher profitability (Naik, 2001).
- ✓ In Karnataka; groundnut, jowar, cotton, coconut and banana were grown as organic. The major problems faced by organic farmers were found to be initial lower yields, no price incentives, no separate markets for organic produce, besides lack of and high costs of certification (Singh, 2003).

## OTHER FORMS OF ORGANIC FARMING

### 1. Rishi Krishi :

Drawn from Vedas, the Rishi Krishi method of natural farming has been mastered by farmers of Maharashtra and Madhya Pradesh. In this method, all on-farm sources of nutrients including composts, cattle dung manure, green leaf manure and crop biomass for mulching are exploited to their best potential with continuous soil enrichment through the use of Rishi Krishi formulation known as “*Amritpani*” and virgin soil. 15 kg of virgin rhizosperic soil collected from beneath of Banyan tree (*Ficus bengalensis*) is spread over one acre and the soil is enriched with 200 lAmritpani. **It is prepared by mixing 250 g ghee into 10 kg of cow dung followed by 500 g honey and diluted with 200 l of water.** This formulation is utilized for seed treatment (*beej sanskar*), enrichment of soil (*bhumi sanskar*) and foliar spray on plants (*padap sanskar*). For soil treatment it need to be applied through irrigation water as fertigation. The system has been demonstrated on a wide range of crops i.e. fruits, vegetables, cereals, pulses, oilseeds, sugarcane and cotton.

2. **Panchgavya Krishi:** prepared from five ingredient viz. cow dung, urine, milk, curd and ghee, act as bio-enhancer contains hormones, micro and macro nutrient. Used for spraying. Panchgavya contains many useful microorganisms such as fungi, bacteria, actinomycetes and various micronutrients. The formulation act as tonic to enrich the soil, induce plant vigour with quality production. Application of panchgavya has been found

to be very effective in many horticultural crops such as mango, guava, acid lime, banana, spice turmeric, flower-jasmine, medicinal plants like Coleus, agandha, vegetable like cucumber, spinach, okra, radish and grain crops such as maize, green gram and sunflower. Panchgavya has also been found to be reducing nematode problem in terms of gall index and soil nematode population. As due to application of panchgavya a thin oily film is formed on the leaves and stem, it reduces evaporation losses and ensures better utilization of applied water.

3. **Natural Farming:** Natural farming emphasizes on efficient use of on-farm biological resources and enrichment of soil with the use of Jivamruta to ensure high soil biological activity. Use of Bijamruta for seed/ planting material treatment and Jivamruta for soil treatment and foliar spray are important components. Jivamruta has been found to be rich in various beneficial microorganisms. As per the studies conducted by Bio Centre Bangalore the Jivamruta contains following microorganisms:

- Azospirillum 2 x 10<sup>6</sup>
- PSM 2 x 10<sup>6</sup>
- Pseudomonas 2 x 10<sup>2</sup>
- Trichoderma 2 x 10<sup>6</sup>
- Yeasts and moulds 2 x 10<sup>7</sup>

500 l jivamruta is needed for one application in one hectare. It can be applied through irrigation water by flow, by drip or sprinkler or even by drenching of mulches spread over the field or under the tree basin.

4. **Natueco Farming:** The Natueco farming system follows the principles of eco-system networking of nature. It is beyond

the broader concepts of organic or natural farming in both philosophy and practice. It offers an alternative to the commercial and heavily chemical techniques of modern farming. Instead, the emphasis is on the simple harvest of sunlight through the critical application of scientific examination, experiments, and methods that are rooted in the neighborhood resources. It depends on developing a thorough understanding of plant physiology, geometry of growth, fertility, and biochemistry. This can be simply achieved through: '**Demystification of Science**'.

5. **Homa Farming:** Homa farming has its origin from Vedas and is based on the principle that "you heal the atmosphere and the healed atmosphere will heal you" The practitioners and propagators of homa farming call it a "revealed science". It is an entirely spiritual practice that dates from the Vedic period. The basic aspect of homa farming is the chanting of Sanskrit mantras (Agnihotra puja) at specific times in the day before a holy fire. The timing is extremely important. While there is no specific agricultural practice associated with homa farming, the farm and household it is practiced in, is energised and "awakened". The ash that results from the puja is used to energise composts, plants, animals, etc. **Homa Organic Farming is holistic healing for agriculture and can be used in conjunction with any good organic farming system.** It is obviously extremely inexpensive and simple to undertake but requires discipline and regularity. Agnihotra is the basic Homa fire technique, based on the bio-rhythm of sunrise and sunset, and can be found in the

ancient sciences of the Vedas. Agnihotra has been simplified and adapted to modern times, so anybody can perform it. During Agnihotra, dried cow dung, ghee (clarified butter) and brown rice are burned in an inverted, pyramid-shaped copper vessel, along with which a special mantra (word-tone combination) is sung.

### ADVANTAGES OF ORGANIC FARMING

1. It helps in maintaining environmental health and reduces pollution.
2. It helps in maintaining biodiversity.
3. Ensure optimum utilization of resources for short term benefits and conserve them for future generation.
4. It improves soil's physical properties such as granulation and good tilth.
5. It improves the soil chemical properties such as supply and retention of soil nutrients and promotes favourable chemical reactions.
6. Minimizes pollution due to conversion of waste material into valuable compost
7. Eliminates the risk of human and animal health hazards by eliminating the chances of chemical residues.
8. Eliminates the chances of contamination in water bodies.
9. It minimizes the cost of production through the use of farm inputs.
10. It ensures sustained productivity without any loss in fertility.

11. Organically grown products are nutritionally rich and better in quality.
12. Organically grown plants are more resistant to disease and pests.
13. Due to diversification of crops there is more secured income.

### DISADVANTAGES OF ORGANIC FARMING

1. In changing over to organic farming, an initial crop loss generally occurs.
2. There are no fully developed markets for organic products.
3. Biological control may have been weakened or destroyed due to chemicals, which may take further three/four years to build up.
4. Limited availability of inputs like FYM, Compost and vermicompost etc.
5. Slow release of nutrients from organic sources which is not matching the nutritional demand of high yielding varieties.

### VARIOUS CAUSES OF LOW ADOPTION OF ORGANIC FARMING

1. Chemicals are easy to use and less costly.
2. The benefits of organic practices are not seen immediately.
3. Large quantities of organic inputs are required.
4. Difficult to get the organic fertilizers.
5. Unorganized market for organically grown produce.
6. Preferential behavior of consumers towards the organic food not yet established.
7. Economic loss due to transition (from traditional agriculture to organic agriculture or conventional to organic).

8. No experimental evidence in the cost benefit ratio of organic farming.
9. Government efforts to propagate organic farming are very little.
10. Scientific research programmes on organic farming are also scarce.

### PROBLEMS AND CONSTRAINTS

1. Lack of Awareness
2. Output Marketing Problems
3. Shortage of Bio-mass
4. Inadequate Supporting Infrastructure
5. High Input Costs
6. Marketing Problems of Organic Inputs
7. Absence of an Appropriate Agriculture Policy
8. Lack of Financial Support
9. Low Yields
10. Inability to Meet the Export Demand
11. Vested Interests
12. Lack of Quality Standards for Bio-manures
13. Improper Accounting Method
14. Political and Social Factors
15. Excessive cost of existing inspection and certification system which is not affordable by farmers.
16. Heavy metals content of urban compost.
17. Non-availability of organic package of practice for all crops based on locally available inputs.
18. Non-awareness of farmers and NGOs on the impact of organic farming
19. Slow release of nutrients from organic sources which is not matching the nutritional demand of high yielding varieties.

