

Introducing organic agriculture



SS RANA
SR SCIENTIST



As the food as the mind
As the mind as the thought
As the thought as the action

Sustainable Agriculture (SA)

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- Sustainable development – Sustainable agriculture
- Sustainable implies long - term support or permanence
- SA – Farming system that are capable of maintaining productivity and usefulness to society indefinitely.
- It must be resource conserving, socially supportive, commercially competitive and environmentally sound.

- **“Sustainable agriculture is the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of environment and conserving natural resources” - FAO**
- **A sustainable agriculture is ecologically sound, economically viable, socially just and humane – International Alliance for Sustainable Agriculture**

SA

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- SA presents a positive response to the limits and problems of both traditional and modern agriculture.
- This result in integrated, nature-based agro-ecosystems designed to be self-reliant, resource-conserving and productive in both the short and long terms.
- **Organic farming (OA) is one of the several approaches found to meet the objectives of SA**

OA v/s SA

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- Organic farming is often associated directly with, "*Sustainable farming*." However, 'organic farming' and 'sustainable farming', policy and ethics-wise are two different terms. Many techniques used in organic farming are not alien to various agriculture systems including the traditional agriculture practiced in old countries like India. However, organic farming is based on various laws and certification programmes.
- OA is thought of as the best alternative to avoid the ill effects of chemical farming. The origin of organic farming goes back, in its recent history, to 1940s.

Affects of Modern Farming Technology

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- The unsustainability of Indian agriculture is caused by the modern farming methods which have badly affected/damaged production resources and the environment.
- Chemical Contamination (fertilizers and pesticides)
- **Salinity and Water logging**
- **Depletion of Energy Resources**
- **Input-Output Imbalance**
- Expansion of Cultivated Area
- Reduction in Genetic Diversity
- **Low Productivity**

Benefits of Organic Farming

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- **Healthy Foods**
- **Improvement in Soil Quality**
- **Increased Crop Productivity and Income**
- **Low Incidence of Pests**
- **Employment Opportunities**
- **Indirect Benefits**

History of Organic farming

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- The British botanist **Sir Albert Howard** is often referred to as the **father of modern organic agriculture**. From 1905 to 1924, he worked as an agricultural adviser in [Pusa](#), Bengal, where he documented traditional Indian farming practices and came to regard them as superior to his conventional agriculture science.
- **The term *organic farming* was coined by Lord Northbourne** in his book *Look to the Land* (written in 1939, published 1940). From his conception of "the farm as organism," he described a holistic, ecologically balanced approach to farming.
- In 1939, influenced by Sir Albert Howard's work, Lady Eve Balfour launched the Haughley Experiment on farmland in England. It was the first scientific, side-by-side comparison of organic and conventional farming. Four years later, she published *The Living Soil*, based on the initial findings of the Haughley Experiment. Widely read, it led to the formation of a key international organic advocacy group, the Soil Association.

History of Organic farming

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- **During the 1950s, sustainable agriculture was a topic of scientific interest, but research tended to concentrate on developing the new chemical approaches. In the US, J.I. Rodale began to popularize the term and methods of organic growing, particularly to consumers through promotion of organic gardening.**
- **In 1962, Rachel Carson, a prominent scientist and naturalist, published *Silent Spring*, chronicling the effects of DDT and other pesticides on the environment. A bestseller in many countries, including the US, and widely read around the world, *Silent Spring* is widely considered as being a key factor in the US government's 1972 banning of DDT. The book and its author are often credited with launching the worldwide environmental movement.**
- **In the 1970s, global movements concerned with pollution and the environment increased their focus on organic farming. As the distinction between organic and conventional food became clearer, one goal of the organic movement was to encourage consumption of locally grown food, which was promoted through slogans like "Know Your Farmer, Know Your Food".**

History of Organic farming

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- In 1972, the International Federation of Organic Agriculture Movements (IFOAM) was founded in Versailles, France and dedicated to the diffusion and exchange of information on the principles and practices of organic agriculture of all schools and across national and linguistic boundaries.
- In the 1980s, around the world, farming and consumer groups began seriously pressuring for government regulation of organic production. This led to legislation and certification standards being enacted through the 1990s and to date.

Broad Objectives

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The broad objectives of organic farming in India can be the following in the light of the discussions on the adverse effects of the conventional farming system the country practiced for about 30-40 years and the potential benefits of the organic methods:

1. Sustainable agriculture
2. Increasing agriculture production
3. Food self-sufficiency
4. Environmental protection
5. Conservation of natural resources
6. Rural development

Organic Agriculture - definitions

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There is lot of confusion on what actually means organic agriculture. The word 'organic' means "of plant or animal origin", but it also refers to the organizational aspect of an organism. Therefore, organic agriculture is not a very precise term. For some people it is the kind of agriculture which is based on organic manures or other natural inputs, i.e. minerals or pesticides of plant origin. In this view, emphasis is given to the renunciation of fertilizers and pesticides which are synthetic or chemical.

For others it refers to agricultural systems, which follow the principles and logics of a living organism in which all elements (soil, plants, farm animals, insects, the farmers etc) are closely linked with each other. Organic farming therefore, must be based on a through understanding and clever management of these interactions and processes.

- Organic Agriculture is often defined by organic standards which explain what the principles are and which methods and inputs are not permitted. While standards are well suited to define a minimum common ground for the various kinds of organic agriculture, they do not provide many guidelines on how an ideal organic farming system should look like.

OA - Definitions

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- In 1980, the USDA released a landmark report of organic farming. The report defined organic farming as a production system, which avoids or largely excludes the use of synthetic organic fertilizers, pesticides, growth regulators and livestock feed additives. Organic farming systems largely depends on crop rotations, crop residues, animal manures, green manures, off-farm organic wastes, mechanical cultivation, mineral bearing rocks and aspects of biological control to maintain soil productivity, supply plant nutrients and to control insects, pathogens and weeds .

OA - Definitions

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- According to Codex definition (FAO), organic agriculture is production management system, which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and biological activity. It emphasizes the use of management practices in preferences to the use of off-farm inputs, taking into account that regional conditions require locally adopted systems. This is accomplished by using, where possible, on-farm agronomic, biological and mechanical methods, as opposed to using synthetic materials to fulfill any specific function within the system.

OA - Definitions

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- "Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.." — IFOAM.

OA - Definitions

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- **ORGANIC AGRICULTURE** is a system of farm design and management to create an eco system, which can achieve sustainable productivity without the use of artificial external inputs such as chemical fertilizers and pesticides – NPOP INDIA



Health



Care

Principles of Organic Farming



Ecology



Fairness

OA – principles (IFOAM)

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- The principle of **health** – Organic Agriculture should sustain and enhances the health of soil, plant, animal, human and planet as one and indivisible.
- The principle of **ecology** – Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.
- The principle of **fairness** – Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities and
- The 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.

Organic principles

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- biodiversity,
- integration,
- sustainability,
- natural plant nutrition,
- natural pest management, *and*
- integrity.

Assumptions

Man is an integral part of Nature's cycle.

We do not know the full consequences of our actions on Nature.

Development principles

Collaboration with Nature should be promoted through the establishment and build-up of a cyclical principle that ensures versatility, diversity and harmony, and the re-cycling and use of renewable resources. (*Cyclical principle*)

Known and well-functioning technologies are better than risky technologies. It is better to prevent damage than to depend on our ability to cure the damage. (*Precautionary principle*)

Transparency and co-operation in food production can be improved by nearness. For example, using experience-based knowledge and local interests concerning the development of cultural and social values. (*Nearness principle*)

Fundamental assumptions and principles relating to the development of organic farming

Principles-Naturland German



- Sustaining and improvement of the soil
- Realisation (near as possible) of nutrient re-cycling (farm, village, region)
- Intensive use of legumes/leguminous trees to provide nitrogen supply
- Biological plant protection through prevention

- Diversity of crop varieties and species grown
- Site and species appropriate animal husbandry
- Prohibition of Genetic Engineering and products thereof
- Maintenance of the surrounding natural landscape (sustainable eco-agrosystems)

- Least possible consumption of non-renewable energy and resources
- Ban on synthetic, chemical fertilisers, plant protection, storage and ripening means as well as hormones and synthetic growth regulators (also harmful processing aids in food processing).

Is traditional farming organic?

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- What is traditional farming?
- Agrochemicals have been used in a large scale only since the 1960s. Therefore, farming communities which have not been influenced by the so called “Green Revolution” automatically meet the most important criteria of organic agriculture, i.e. the non-use of any chemical fertilizer, pesticides and genetically modified organisms. These systems are referred to as “Traditional Farming”.

- Over the last few decades, the focus in agriculture typically shifted from mainly subsistence agriculture (for own consumption) to market production (for gaining a financial income). In many countries, the density of population increased tremendously and many traditional farming systems have been unable to meet the yield expectations of the farmers. Due to reduced fallow periods, overgrazing or exploitative cultivation, many traditionally farmed areas face severe degradation. At the same time, high yielding crop varieties have been introduced which are more prone to diseases. Organic farming tries to meet the increased needs of the growing population while not risking the long-term productivity of the farmland.

- Many methods and techniques of organic agriculture have originated from various traditional farming systems all over the world. However, not all traditional systems make use of these methods, sometimes for the simple reason that they are not known in a specific region. In addition, organic farming disposes of a rather modern technologies such as the use of antagonistic microbes in pest management, high yielding but disease resistance varieties or the use of highly efficient green manure plants.

- Whether a certain traditional farming system can be called organic will depend on whether all the organic standards are fulfilled. For instance, some traditional systems get in conflict with the requirements of organic animal husbandry (sufficient space and free movement), the necessary prevention of soil erosion, the ban to cut forests and to burn biomass (e.g. slash and burn systems).

Is traditional farming organic?

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What traditional and organic farming have in common	Organic methods which can be found in traditional farming	What is specific to organic farming
No use of chemical fertilizers, insecticides, fungicides, herbicides, growth promoters etc	Closed nutrient cycles, low external inputs	Use of microbial preparations for pest management
	Recycling of biomass through mulching or composting	Release or efficient attraction of beneficial insects
No use of genetically engineered plants and animals	Mixed cropping and/or crop rotations	Use of high yielding, but disease resistance varieties/breeds of crops/animals
Use of animal manures	Sustainable management of resources: soil, energy, water	Introduction of efficient green manures, cover crops and nitrogen fixing trees
	Maintenance of soil fertility, prevention of soil erosion	Use of improved tools for soil cultivation, weeding, sawing etc
	Animal friendly husbandry practices	Application of improved compost methods and biofertilizers

Thanks