

Organic Agriculture

1st lecture for BSc students

Introduction to organic farming

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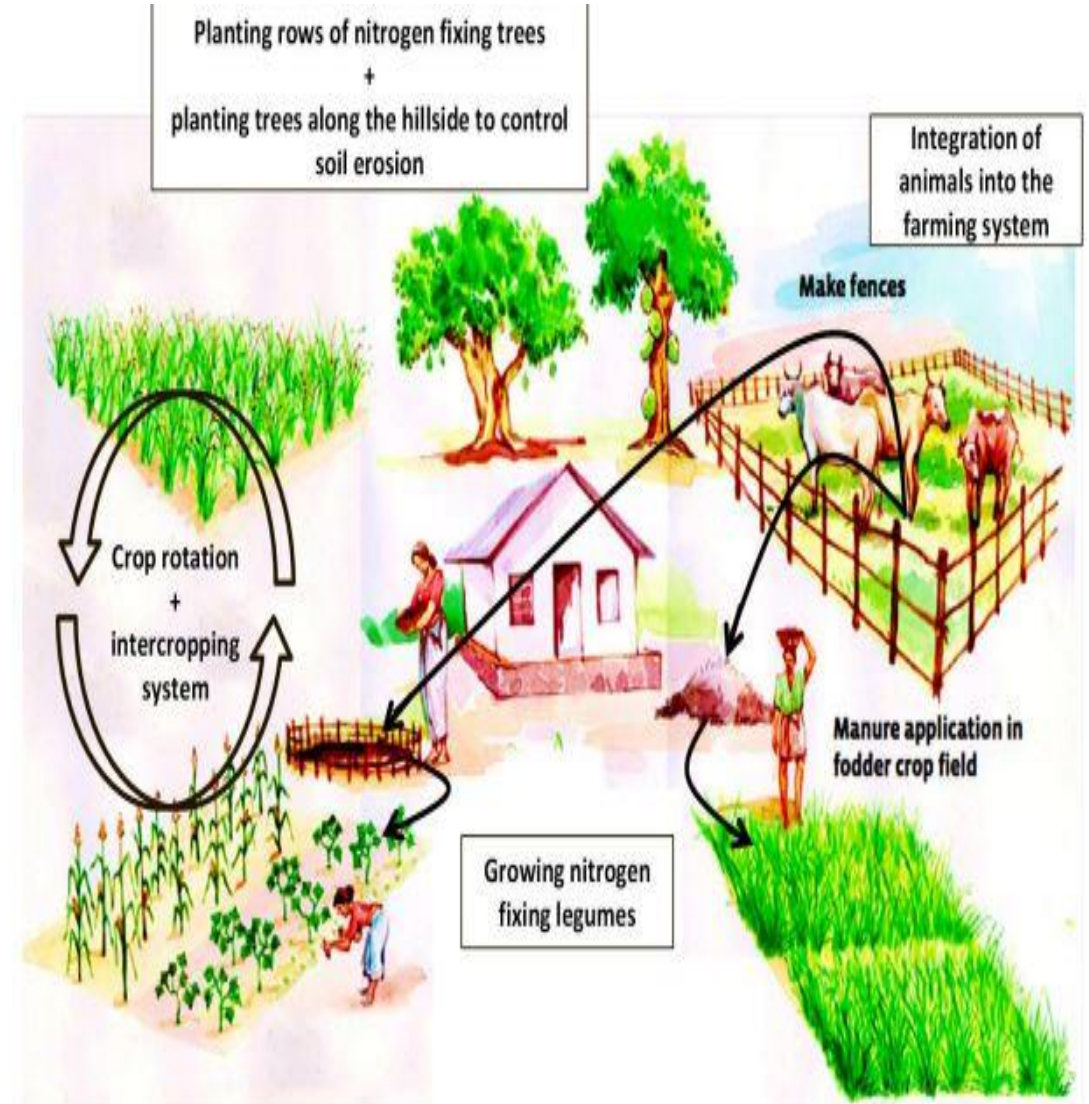


FIGURE 2-6 • SOME ORGANIC FARMING METHODS TO TEST IN YOUR OWN FARM

Organic agriculture

Organic agriculture is an integrated production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity (FAO/WHO Codex Alimentarius Commission, 2007).

It emphasizes the use of natural inputs (i.e. mineral and products derived from plants) and the renunciation of synthetic fertilizers and pesticides.

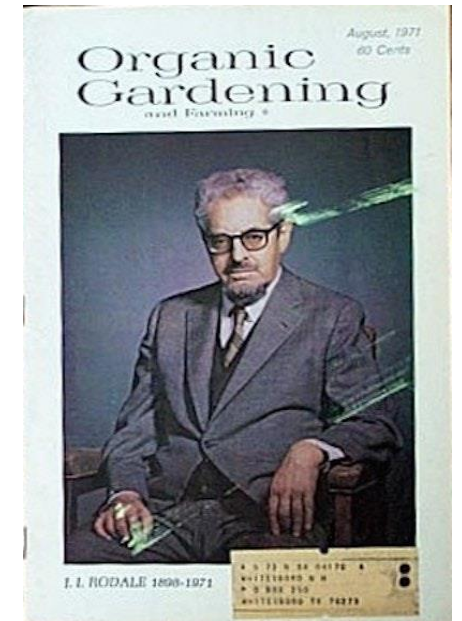
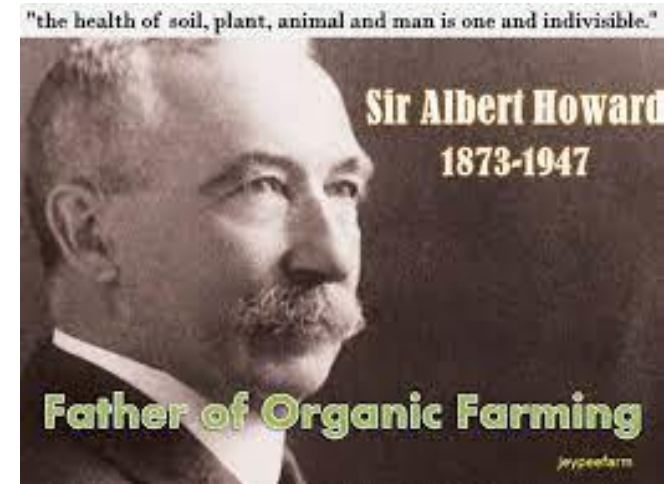


According with the Guidelines of Organically Food Produce of the Codex Alimentarius (2007), an organic production system is designed to:

- Enhance biological diversity within the whole system;
- Increase soil biological activity;
- Maintain long-term soil fertility;
- Recycle wastes of plant and animal origin in order to return nutrients to the soil, thus minimizing the use of non-renewable resources;
- Rely on renewable resources in locally organized agricultural systems;
- Promote the healthy use of soil, water and air as well as minimize all forms of pollution that may result from agricultural practices;
- Promote the careful processing methods agricultural products in order to maintain the organic integrity and vital qualities of the product at all stages;
- Become established on any existing farm through a period of conversion, the appropriate length of which is determined by site-specific factors such as the history of the land, and type of crops and livestock to be produced.

History of organic farming

- Sir Albert Howard, F.H. King, Rudolf Steiner, and others developed the concepts of organic agriculture in the early 1900s
- In the 1940s and 1950s, J.I. Rodale and his son Robert published Organic Gardening and Farming magazine, as well as a variety of organic farming texts.
- The release of Rachel Carson's Silent Spring, which exposed the magnitude of environmental devastation caused by insecticides, fueled demand for organic food in the 1960s.
- Organic food sales have consistently increased since the late 20th century.



Organic Agriculture Worldwide 2020

Organic Farmland



74.9M
ha

Organic farmland in million hectares

+4.1%

Growth 2019/2020

190

Countries with organic farming

Land in million hectares Top 3 countries



Organic Producers

The number of organic producers is increasing

3.4M

Organic farmers

+7.6%

From 2019

Number of producers Top 3 countries



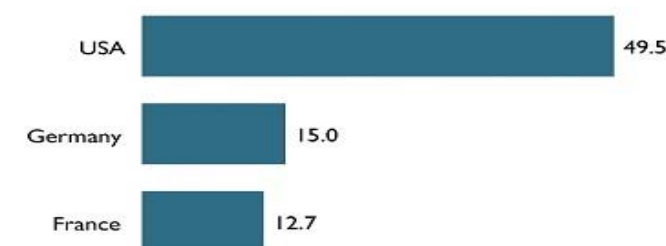
Organic Market

The global market is growing and consumer demand is increasing

Over 120.6

Global organic food market in billion euros

Market in billion euros Top 3 countries



Market growth in percent Top 3 countries



Framing system

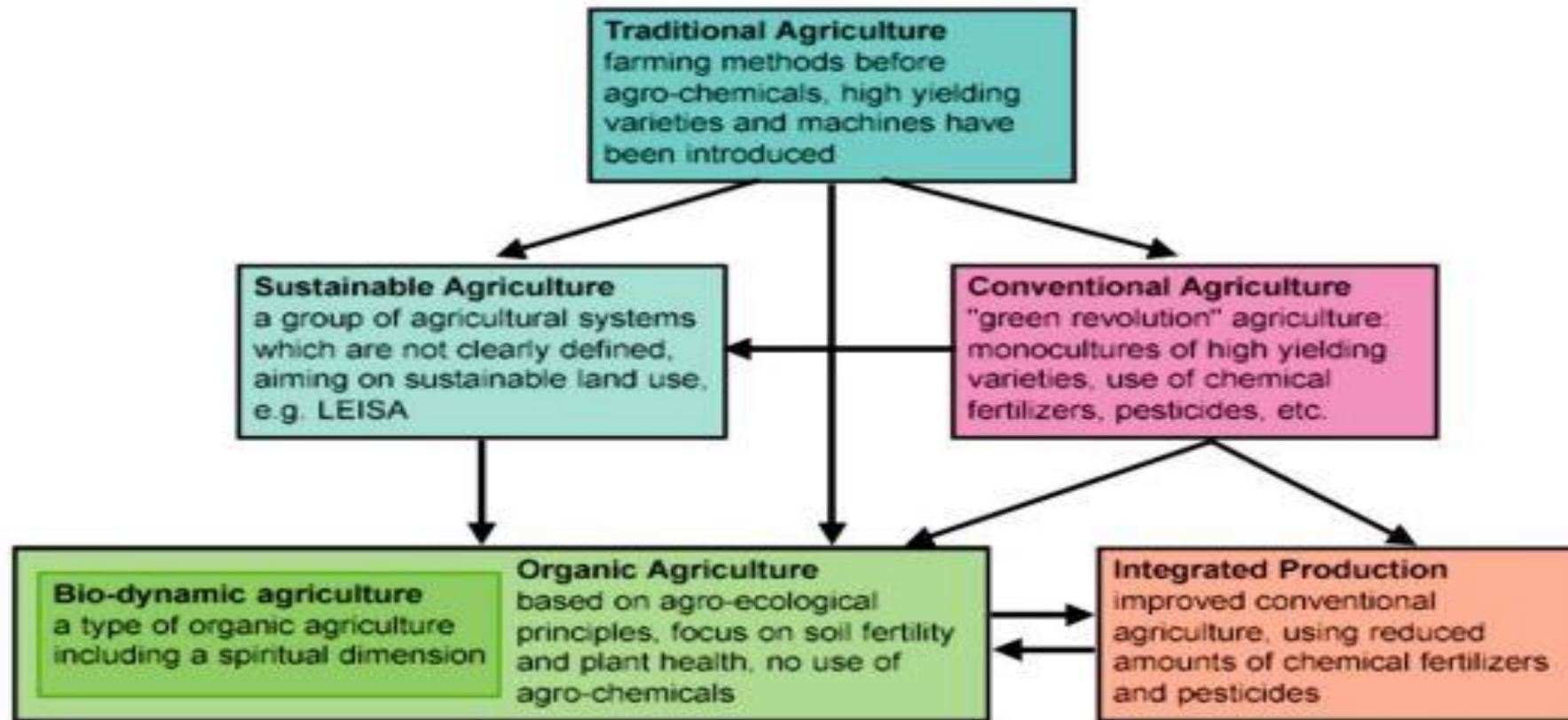
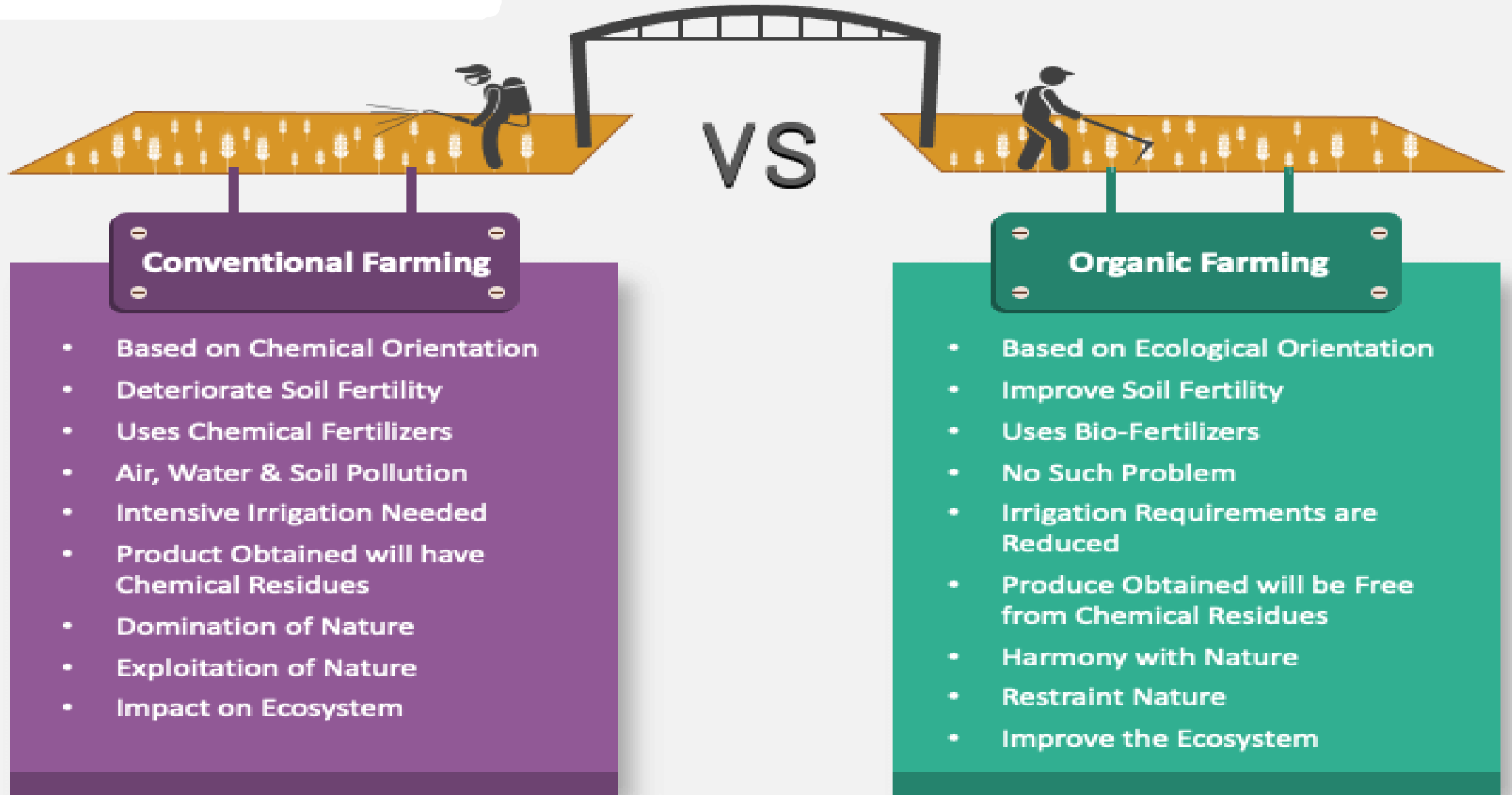


FIGURE 1-4 - DEFINITION OF SOME FARMING SYSTEMS: THIS SHOWS AN ATTEMPT TO DISTINGUISH BETWEEN SOME COMMONLY USED TERMS OF AGRICULTURAL SYSTEMS (ARROW SHOW HOW THEY CAN TRANSFORM FROM ONE TYPE INTO ANOTHER)

CONVENTIONAL VS ORGANIC FARMING



Advantages of organic agriculture

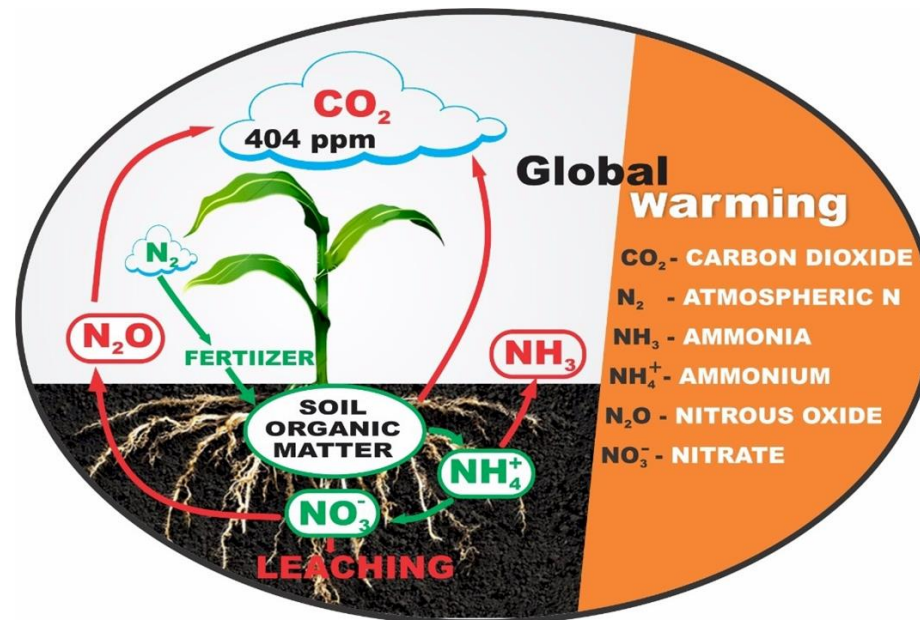
✓ Health Benefits

1. Organic produce is free from harmful chemicals and pesticides.
2. Organic food that is high in nutrients
3. Organic food is of higher quality than conventional food.



✓ The Environment

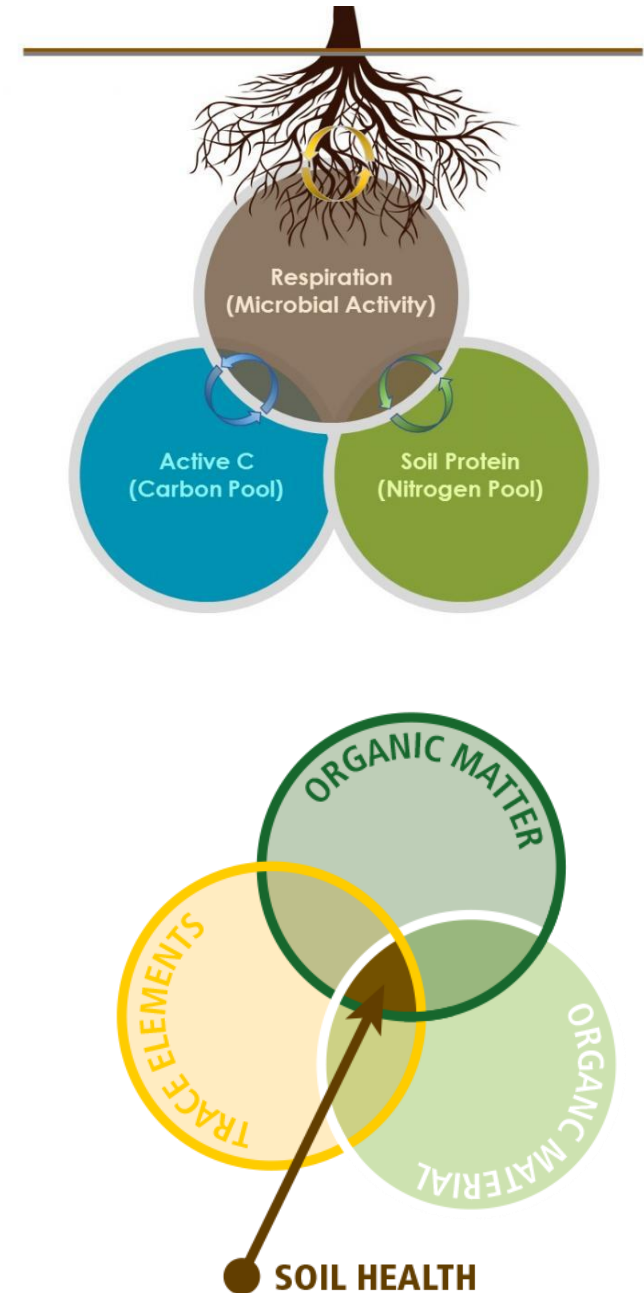
1. Organic farming is a viable solution for environmental and ecological preservation.
2. FOA also believes that organic farming has the potential to dramatically reduce global warming and environmental degradation.



Health Benefits

✓ Soil Health

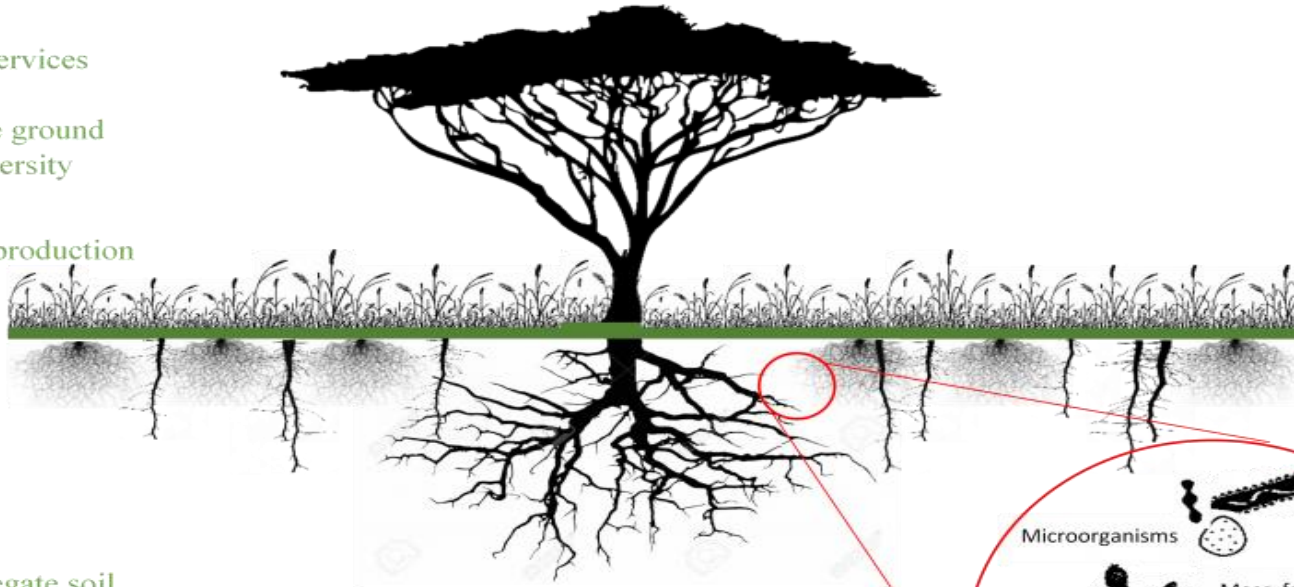
1. Organic farming is defined by production methods that do not rely on chemical inputs to boost yield.
2. Organic fertilizers not only improve the soil's water retention quality, but they also raise the soil's natural fertility.
3. Furthermore, crop rotation technique aids in the replenishment of nutrients in the soil and aids in the prevention of land deterioration.



Soil Services

Above ground biodiversity

Plant production

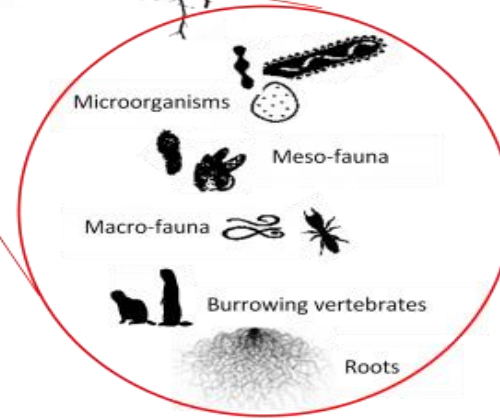
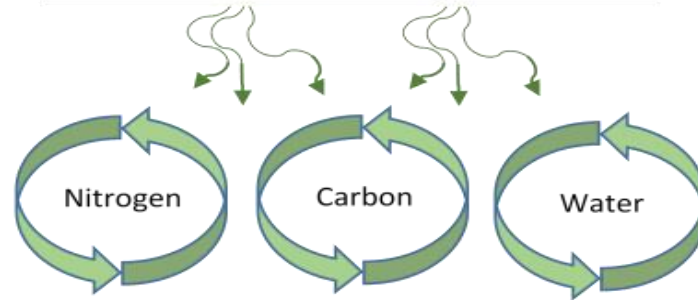


Aggregate soil structure

Decomposition: organic matter (residue and metabolite from vegetation, animals and microbes)

Soil water infiltration and storage

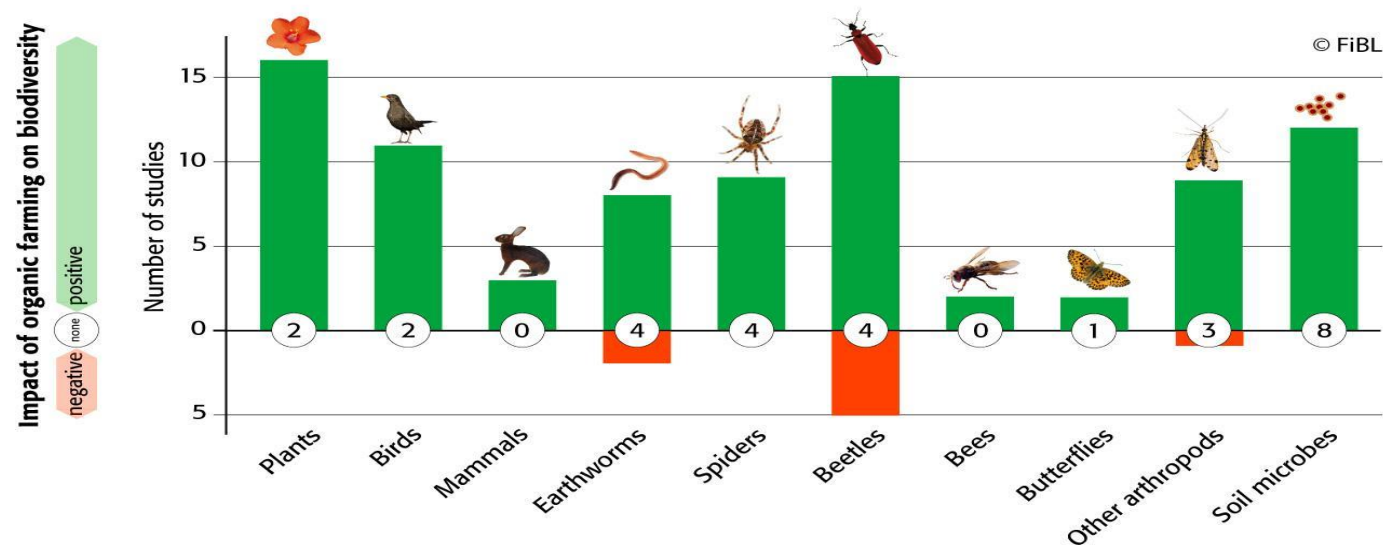
Soil fertility



Below ground biodiversity

✓ Biodiversity

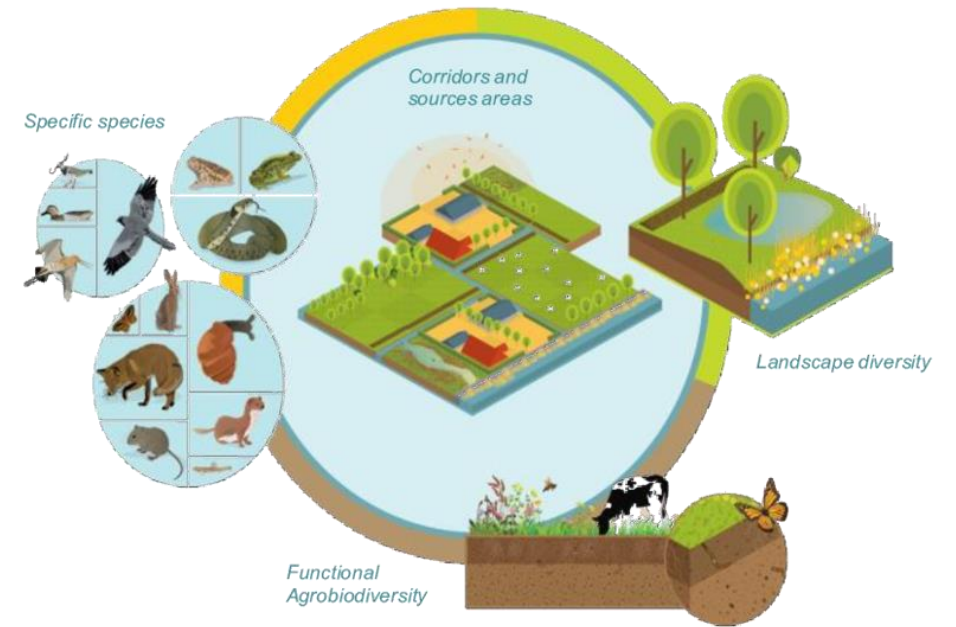
1. Organic farming involves crop rotation, a practice known as polyculture, which preserves a variety of beneficial insects and microorganisms in the soil.
2. Conventional farming uses excessive amounts of chemicals, destroying the biodiversity of soil and water.
3. In addition, bacteria and microorganisms help in better food production.



- **Biodiversity**

- Biodiversity is part of the organic farming systems, as promotion of species diversity on farms is integral to organic production. Via practices such as dedicated biodiversity areas, extensively farmed areas and site-adapted management, organic farms provide more space and resources for the diverse needs of a multitude of species (FiBL)

biodiversity value of agriculture and to preserve vulnerable species which depend on cultural land for breeding and food.



✓ Sustainability

- **Sustainability:** is the practice of using the resources at our disposal without significantly depleting them. It tries to protect the ecology and environment while also thinking about the needs of future generations.

1. In this sense, sustainable development and organic farming are interchangeable terms. Organic food production does not overload the environment, the land, or the water in order to increase yield and profit.

2. It strives to achieve harmony with environment by utilizing methods that vastly enhance the quality of interconnected ecosystems like soil, water, and air.



- **Disadvantages of organic fertilizers:**

1. Natural fertilizers are slow to break down.
2. Many natural fertilizers, such as manure, seaweed or fish oil, are quite smelly and are too offensive to use on indoor plants.
3. Gathering natural materials, such as seaweed, grass clippings and leaves, organic materials break down at different rates.
4. The composition and content of organic fertilizer is never consistent.
5. Organic produce costs more since a lot of labor and time are involved



**Slow Release
Fertilizer**



Chemical Fertilizers

Is defined as any inorganic material of wholly or partially synthetic origin that is added to soil to sustain plant growth.

Organic Fertilizers

Substances that are derived from the remains or by products of natural organisms which contain the essential minerals for plant growth.



BEST FOR *You*

Thank you



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