



## Organic agriculture mitigates climate change



agriculture,  
forestry & fisheries

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Agriculture, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA



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## DEFINITION

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Organic farming is well defined in international standards such as the Codex Alimentarius, the European and American regulations and the International Federation of Organic Agriculture Movements, (IFOAM). The FAO/WHO Codex Alimentarius Commission defines organic agriculture as: A holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasises the use of management practices in preference to the use of off-farm inputs. This is accomplished by using agronomic, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system.

Organic farming refers to the type of farming that is done without the use of synthetic chemicals such as pesticides, fertilisers, fungicides and insecticides or genetically modified seeds. The organic farmers use a range of techniques that help sustain ecosystems and reduce pollution, while improving both the production and quality of nutrition, linked to improved social and economic viability. In the case of plant production it involves the use of crop rotation, natural composting, approved environmentally friendly

pest control and homeopathic remedies to produce food that is free of all artificial additives. Most critically, organic food production is based on genuinely sustainable systems.



## ORGANIC FARMING IN CONTEXT

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Central to the organic production system is the biological management of the fertility of the soil. Soil is managed in such a way as to optimise and improve soil health through the management of the inorganic and organic soil components to enhance biological processes that consequently improve plant health and enable the return of organic material back into the soil. Crop combinations, ecological companionships and rotations are also managed in such a way as to improve plants' competitive ability and create a favourable environment for the presence of natural predators of crop pests. In livestock, animals are selected, bred and managed to enhance natural resistance to pests and diseases through good nutrition and management practices such as interrupting host/ pathogen relationships. These practices ultimately eliminate the use of external inputs to manage disease and infertility.





Organic production aims at a sustainable production system based on natural processes. Key characteristics are that organic agriculture:

- relies primarily on local, renewable resources;
- maximises food security at the micro and macro levels;
- maximises the labour opportunities for workers, while ensuring their protection and well-being;
- makes efficient use of renewable and other sustainable energy and the production potential of integrated biological systems;
- builds and maintains the fertility of the soil;
- enhances and preserves the health of the surrounding environment and the agro-diversity of a specific region;
- maximises recirculation of plant nutrients and organic matter;
- does not use organisms or substances foreign to nature (e.g. GMOs, chemical fertilisers or systemic pesticides);
- maintains diversity in the production system as well as the agricultural landscape;
- gives farm animals life conditions that correspond to their ecological role and allow them to behave in a natural way.

## **PRINCIPLES OF ORGANIC AGRICULTURE**

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According to IFOAM, the principles of organic agriculture are based on four fundamental principles:

### **Principle of health**

- Organic agriculture should sustain and enhance the health of the soil, plants, animals, humans and the planet as one and indivisible. The health of individuals and communities cannot be separated from the environment.
- The role of organic agriculture is to sustain and enhance the health of ecosystems and organisms. Organic agriculture aims to produce high-quality, nutritious food that contributes to preventive health care and

well-being. It should avoid the use of fertilisers, pesticides, animal drugs and food additives that may have adverse health effects.

### Principle of ecology

- Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. It is rooted within living ecological systems and production is to be based on ecological processes and recycling.
- Organic farming, pastoral and wild harvest systems should fit in with the cycles and ecological balances in nature and organic management must be adapted to local conditions, ecology, culture and scale. Inputs should be reduced by reuse, recycling and efficient management of materials and energy in order to maintain and improve environmental quality and conserve resources.
- Organic agriculture should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. Those who produce, process, trade,





or consume organic products should protect and benefit the common environment, including landscapes, climate, habitats, biodiversity, air and water.

### **Principle of fairness**

- Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities.
- Fairness is characterised by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings.
- This principle emphasises that organic agriculture should involve human relationships that ensure fairness at all levels and to all parties, should provide everyone involved with a good-quality life, contribute to food sovereignty and reduction of poverty. Animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behaviour and well-being.

- Fairness requires systems of production, distribution and trade that are open and equitable and account for real environmental and social costs.

### **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 agriculture is a living and dynamic system that responds to internal and external demands and conditions. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardising health and well-being. Consequently, new technologies need to be assessed and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.

## **BENEFITS OF ORGANIC AGRICULTURE IN MITIGATING CLIMATE CHANGE**

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- Organic agriculture is a climate smart agriculture that seeks to increase productivity in an environmentally and socially sustainable way, strengthen farmers' resilience to climate change, and reduce agriculture's contribution to climate change by reducing greenhouse gas (GHG) emissions and increasing carbon storage on farmland.
- Organic agriculture not only enables ecosystems to better adjust to the effects of climate change but also offers a major potential to reduce the emissions of agricultural GHGs.
- Organic matter content is usually higher in organically-managed soils, indicating higher fertility and stability of organic soils as well as moisture retention capacity, which reduce the risk of erosion and desertification.
- Organically-farmed soils have significantly higher biological activity and higher total mass of microorganisms, making for more rapid nutrient recycling and improved soil structure.
- Organic agriculture poses no risk of ground and surface water pollution through synthetic pesticides.



- Nitrate leaching rates per hectare are significantly lower in organic agriculture compared to other production systems.
- Organic agriculture enables ecosystems to better adjust to the effects of climate change and has a major potential for reducing agricultural GHG emissions.
- Organic agricultural strategies, by recycling organic matter and tightening internal nutrient cycles, contribute to carbon sequestration.
- Organic agriculture performs better than other production systems on a per hectare scale, both with respect to direct energy consumption (fuel and oil) and indirect consumption (synthetic fertilisers and pesticides).
- Efficiency of energy use on organic farms is high.



## REFERENCE

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