

# **ASPECTS REGARDING THE OBJECTIVES, PRINCIPLES AND NORMS OF ORGANIC AGRICULTURE**

**GRIGORE A.I.<sup>1)</sup>, VLADUTOIU L.<sup>1)</sup>, CRISTEA M<sup>1)</sup>, PETRE A.A<sup>1)</sup>**  
<sup>1)</sup>INMA Bucharest / Romania

**Keywords:** *durable agriculture, sustainability, community legislation, conventional system, the conversion period;*

## **ABSTRACT**

*Organic farming can be defined as a production system that broadly avoids or excludes the use of synthetic compound fertilizers, pesticides, growth regulators and feed additives. Organic farming systems are based on crop rotation, the use of crop residues, animal manure or off-farm organic waste.*

*This article presents the advantages and importance of this system of agriculture, by analyzing the objectives, principles and rules of organic farming, in the context of the high needs of the population to consume organic products.*

## **INTRODUCTION**

Organic farming is that production system which, in a broad sense, avoids or excludes the use of synthetic compound fertilizers, pesticides, growth regulators and feed additives. This type of agriculture is based on measures such as crop rotation, the use of crop residues, animal manure, manure and off-farm organic waste.

This type of farming focuses primarily on changes in the farm and the farming system, especially crop rotation and manure management, in order to achieve an acceptable level of production, and external inputs are generally ancillary or additional. The traditional goal of maximizing agricultural production is counteracted by a widespread concern about the countryside and the environment, but also by the fact that natural resources are limited and as such, need to be better managed.

In EU countries, there is a growing trend for production systems that comply with organic farming rules, systems that can add value to foods and products with a high level of nutritional density, a requirement imposed by European consumers.

## MATERIAL AND METHOD

Recent statistics published by SOEL - SURVEY, INFOAM, EUROSTAT and USDA show that organic farming is on the rise, being practiced in over 100 countries on 5 continents, but has successes and concerns in many other countries.

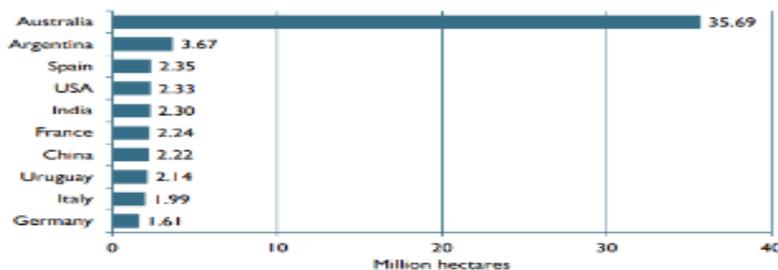
According to FAOSTAT, in 2019, 72.3 million hectares were under organic agricultural management worldwide. The region with the most organic agricultural land is Oceania, with 35.9 million hectares, followed by Europe with 16.5 million hectares, Latin America (8.3 million hectares), Asia (5.9 million hectares), North America (3.6 million hectares) and Africa (2.0 million hectares). Oceania has half of the global organic agricultural land. Europe, a region that has had a very constant growth of organic land over the years, has over 23 percent of the world's organic agricultural land followed by Latin America with 12 percent (fig. 1)

| Region           | Organic agricultural land [hectares] | Regions' shares of the global organic agricultural land |
|------------------|--------------------------------------|---|
| Africa           | 2'030'830                            | 2.8%  |
| Asia             | 5'911'622                            | 8.2%  |
| Europe           | 16'528'677                           | 22.9%   |
| Latin America    | 8'292'139                            | 11.5%   |
| Northern America | 3'647'623                            | 5.0%  |
| Oceania          | 35'881'053                           | 49.6%   |
| <b>World*</b>    | <b>72'285'656</b>                    | <b>100.0%</b>   |

**Figure 1. Distribution of organic agricultural land by region (2019)**

(<https://www.fibl.org/fileadmin/documents/shop/1150-organic-world-2021.pdf>)

The 10 countries with the largest organic agricultural areas have a combined total of 56.5 million hectares and constitute almost 80 percent of the world's organic agricultural land. Apart from the organic agricultural land, there are further organic areas such as wild collection areas (approximately 35 million hectares) (fig.2)



**Figure 2. The ten countries with the largest areas of organic agricultural land (2019)**(<https://www.fibl.org/fileadmin/documents/shop/1150-organic-world2021.pdf>)

Comparative, in 2017, 69.8 million hectares were under organic agricultural management worldwide.



**Figure 3. Organic Farmland (2017)** ([www.organic-world.net-statistics.fibl.org](http://www.organic-world.net-statistics.fibl.org))

In most producing countries there are national bodies that protect and control "organic" production.

In 1972, the International Federation of Organic Agriculture Movements (I.F.O.A.M. - International Federation of Organic Agriculture Movements) was established, based in Germany, which groups over 500 organic farming organizations and over 100 countries. I.F.O.A.M. organizes scientific events, symposia, world congresses, edits scientific or popularization works and adopts at the World Congresses the "Framework Specifications", important in unifying the movements of organic farming, where any country can intervene, correct or replace some provisions. The basic principle of organic farming is "to develop agriculture as an organism and consider it an ecosystem that is shaped by nature and is an alternative to intensification, specialization and dependence on the use of chemicals."

## RESULTS AND DISCUSSION

### The impact of organic farming on the environment

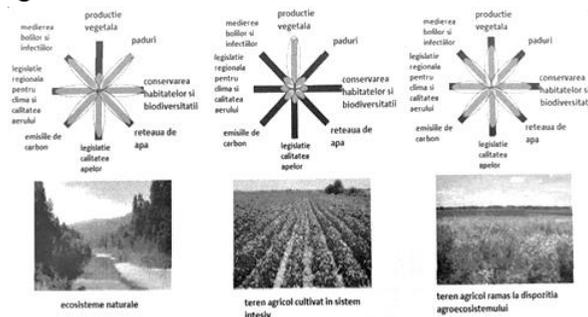
Agricultural activities are important sources of pollutants, which over time have led to the degradation or destruction of ecosystems, have contributed to climate change through the use of fossil fuels, both directly on the farm and in the process of manufacturing pesticides and fertilizers, thus contributing to soil degradation, which releases carbon.

Depletion of organic carbon in the soil through conventional agriculture has limited fertility and water retention, resulting in salting and desertification of irrigated land and soil compaction due to the use of heavy agricultural machinery and pollution through excessive use of pesticides (pest control) and fertilizers. in soil fertilization).

The state of the environment and the efficient use of natural resources influence economic growth, the level and quality of life of

the population. An FAO report states that in the organic farming system, “CO2 emissions per hectare are 48% - 66% lower than in the conventional system” and that “organic farming is more efficient per hectare than conventional farming, both in terms of regarding direct energy consumption (fuel and oil) as well as indirect consumption (fertilizers and pest control products).

Three hypothetical landscapes illustrate the types and multitude of services associated with different types of ecosystems. Natural ecosystems can support many ecosystem services at high levels, but not for food production. An ecologically managed farmland can support a wide range of ecosystem services (J.A. Foley et al., 2005), as shown in Figure 4.



**Figure 4. The impact of organic farming on the ecosystem compared to intensive agriculture (J.A. Foley et al., 2005)**

### Impact on the soil

A large part of these agricultural activities are based on tillage or transformation. These processes have advantages in terms of aeration, reducing the number of weeds, incorporating organic matter or heating it. However, soil work can cause erosion by wind and water. Soil erosion ranks first in terms of land degradation due to intensive grazing, through irrational exploitation of forest and land (to increase arable land and pastures), but also the application of a totally inadequate technological system, especially on land belonging to households. small and medium.

Plowing on slopes, executed perpendicular to the level curves, leads to soil degradation, diminished production potential and change of the external environment by ravaging following heavy rains that can cause removal from the agricultural area and their transfer to unproductive land, with negative effects on the future. agricultural area of the area. Improper irrigation and drainage, associated with other inappropriate practices, lead to intensified physical soil degradation

(destructuring, compaction, crusting, wind and water erosion) and increased environmental pollution.

The application of the principles of organic agriculture, which refer to crop rotation, the use of biofertilizers, but also the promotion of soil quality improvement works are the prerequisites for ensuring a sustainable development of this sector. Reducing, to the point of elimination, the negative impact of degradation processes, increasing production capacity and restoring soil quality are important principles of organic farming.

Improving soil composition by recycling waste and by-products from plants and animals not only intensifies biological activity in the soil and prevents its erosion, but can counteract climate change by restoring levels of organic matter and therefore the concentration of carbon in the soil. Best management practices in organic farms can increase the content of organic matter in the soil and can improve soil quality.

The main objective of organic farming is to protect the biosphere and natural resources of the planet, excluding the use of chemical fertilizers, synthetic pesticides and herbicides, prevention methods playing a key role in the fight against pests, diseases and weeds.

In order to practice an agriculture in harmony with nature, more attention will be paid to the biological techniques used, but also to the local conditions, the system thus adapting to socio-economic realities and traditional methods, through the optimal use of resources from agroecosystems. essential for optimal and long-lasting results.

*The main objectives of organic farming are:*

1. To produce agricultural products of high nutritional quality in sufficient quantity;
2. To develop and strengthen living systems through biological cycles;
3. To promote and diversify biological cycles in agricultural systems, respecting micro-organisms, soil flora and fauna, crops and animal husbandry;
4. Maintain and improve long-term soil fertility;
5. Use local and recyclable natural resources as much as possible;
6. Develop agricultural systems that are as self-sufficient as possible terms of organic matter and nutrients;
7. To ensure the living conditions of all animals as little as possible contrary to the fundamental aspects of their natural behavior;

8. To avoid all forms of pollution that may be favored by agricultural practice;

9. Maintain the genetic diversity of agricultural systems, their environment, including the protection of wild plants and animals;

10. To enable farmers to be adequately remunerated, to have the satisfaction of their own work, to ensure a safe and healthy working environment;

11. To take into account the impact of cultural techniques on the environment and social relations.

12. To develop agricultural systems as self - sufficient as possible, in terms of organic matter and nutrients;

13. To ensure the living conditions of all animals as little as possible contrary to the fundamental aspects of their natural behavior;

14. To avoid all forms of pollution that may be favored by agricultural practice;

15. Maintain the genetic diversity of agricultural systems, their environment, including the protection of wild plants and animals;

Organic farming is based on the conscious concern to follow the discoveries of the biological sciences, integrating the advances of life sciences, but also relies on "respect for the facts", which requires the retention of practices whose effects are good, even if the explanation of their correlations is still flawed, due to insufficient or lack of applied research.

The main practical elements to which organic farming refers refer to:

- maintaining convenient proportions on the farm between the various large groups of plants, as well as achieving as varied and long-lasting crops as possible;
- carrying out crop associations respecting ecological principles;
- fertilization at the soil surface, without incorporation of fresh organic matter;
- moderate works on the ground;
- prevention of attacks of diseases and pests, using physical, technological and phytotherapeutic means;
- extension of manual work and reduction of specific mechanical work in classical agriculture.

*Principles of organic farming:*

The basic principles of organic farming are:

1. Environmental protection;
2. Maintaining and increasing soil fertility;
3. Respect for consumer health;

4. Maintaining the biodiversity of agricultural ecosystems;
5. Recycling substances and resources as far as possible on farms;
6. Consideration of agricultural holdings as balanced entities;
7. Maintaining the integrity of organic agricultural products, from their production to their marketing, plant cultivation and animal husbandry, in accordance with natural laws;
8. Obtaining optimal productions, not maximum ones;
9. New and convenient technologies for the organic farming system, or animal husbandry according to the requirements of each species.

In an organic farming system, the development of sustainable and productive farms will be considered in order to protect the environment. Cultivation technologies must restore and then maintain the ecological stability of the farm and the environment. Soil fertility is maintained and improved through a system of measures that favors maximum biological activity in the soil, as well as the conservation of soil resources.

General principles regarding the conversion period:

The conversion period will be long enough to significantly increase soil fertility and restore ecosystem balance. The length of the conversion period must be adapted to:

- previous land use;
- the ecological context and its implications;
- operator experience;

The conversion period is established by the laws and standards in force, being different from one country to another (Emergency Ordinance of the Romanian Government, no. 34/2000). According to the Emergency Ordinance, the conversion period is as follows:

- 2 years before sowing, for annual crops, pastures and meadows;
- 3 years before harvest, for perennial crops and plantations;
- 1 year for beef cattle;
- 6 months for small ruminants and pigs;
- 12 weeks for dairy animals;
- 10 weeks for poultry intended for meat production, purchased at the age of three days;
- 6 weeks for poultry for meat production;
- 1 year for bees, if the family was bought from conventional apiaries;

The main objective of organic farming is to obtain healthy and safe agricultural products for consumers, taking into account the protection of the environment. The term "Ecological Product"

guarantees that that product is the result of a production method that excludes the use of synthetic chemicals and protects the environment. In order to be marketed, all organic farming products must be inspected and certified by an approved body.

## CONCLUSIONS

Organic farming has a great contribution to long-term economic development, playing an important role in improving the condition of the environment, preserving the soil, improving water quality, biodiversity and protecting nature. This type of farming can move forward in the rural economy and make it viable by expanding high value-added economic activities and creating jobs in rural areas.

In most food processing and winemaking industries there is a great lack of capacity to capitalize on grapes, meat and vegetables, which limits the volume of exportable products.

In order to be validated as organic and placed on the market, foodstuffs must bear on the labels explicit references to their organic production methods and to the quality assessment certification issued by a supervising organization. Organic farms are a new developing sector.

Romania enjoys appropriate conditions to promote organic farming, such as:

- the soil is fertile and productive;
- traditional Romanian agriculture is based on approaches that do not harm the environment and there are possibilities to identify unpolluted ecological areas where organic agriculture could be developed.

In order to develop the agro-ecological sector and to improve the competitiveness of organic products on export markets, we have identified the following measures, which will be implemented:

- capturing and retaining more value on the national component of the value chain by orienting production and sales to primary products and processing products, promoting Romanian ecological export products;
- covering the existing market niche by identifying new export markets and consolidating existing markets;
- implementation of legislation developed for this sector, in order to strengthen the control system through additional measures, designed to supervise inspection and certification bodies in order to increase the quality of exported products;

- creating an appropriate production, processing and marketing system for organic products, designed to meet the needs of internal and external markets;
- promoting the exports of Romanian ecological products by developing the research activity;
- improving the professional training of all actors involved in the ecological sector:
  - breeders;
  - processors;
  - inspectors;
  - experts from the ministry;
  - exporters and importers;
- creation of organized groups of producers to expand production and the market.

Strategically, the qualitative objective of the sector is to position organic agriculture in the center of national agriculture, as a pivot for sustainable development in rural areas.

The main objective of EU agricultural policy on rural development is to promote and develop a compatible relationship between agriculture and the environment.

The quantitative objective is to expand the cultivated area by ecological methods and to create an internal market with ecological products. Romania has great opportunities for the promotion and development of organic agriculture due to an agricultural area of 14.8 million hectares and unpolluted soils. Achieving this important goal requires measures such as better promotion of organic products and increased participation of organic farmers in economic events in the country or abroad (BioFach 2006).

## **ACKNOWLEDGEMENT**

This work was supported by a grant of the Romanian Education and Research Ministry, through Sectoral Plan, contract no. 1PS/2019 and through Programme 1 – Development of the national research-development system, subprogramme 1.2 – Institutional performance – Projects for financing excellence in RDI, contract no. 16PFE

## BIBLIOGRAPHY

1. Bolintineanu Gh. et al., 2009 - *Centralized system for working monitoring of the parameters of the equipment to be applied phytosanitary treatments* OSIM, Patent application no. A-00960 / 23.11.2009;
2. Dumitru M., 2003 – *Cod de bune practici agricole*, vol. I, Editura Expert, București;
3. Fitiu A., 2007 - *Ecologia și protecția mediului*, Editura Academic Pres, Cluj-Napoca;
4. Laza E.A., Caba I., 2020 - *The production of biohumus for a healthy and organic agriculture*, ISB-INMA TEH' București;
5. Marin E. et al., 2020 - *Alternative solutions for weed control on vegetable crops*, ISB-INMA TEH' București;
6. Ștefan V. et al., 2020 - *Ecological method for weed control in viticulture*, ISB-INMA TEH' București;
7. Toncea I., 2005 - *Ghid practic de agricultură ecologică*, Editura Academic Pres, Cluj-Napoca;
8. Vanghele N. et al., 2019 – *Research on methods of de-pollution soils contaminated with heavy metals*, International Conference on Hydraulics, Pneumatics, Sealing Systems, Precision Mechanics, Tools, Specific Electronic Devices & Mechatronics, HERVEX, Băile Govora, Vâlcea;
23. Viorel I., 2000 - *Agricultura ecologică*, Editura Alma Mater, București;
26. Vlăduț V. et al., 2008 - *Guidance on the quality of soil works*, Printech Publishing, București;
28. The World of Organic Agriculture Statistics and Emerging Trends 2021
29. <http://doi.org/10.1051/e3sconf/202128603014>;
29. <http://www.bioagro.ro/>
30. <http://www.ifoam.org/whoisifoam/index.html>
31. [http://www.organic-europe.net/europe\\_eu/default.asp](http://www.organic-europe.net/europe_eu/default.asp)
32. <http://www.fao.org/family-farming/detail/en/c/1378841/>
33. <http://www.fibl.org/fileadmin/documents/shop/1150-organic-world-2021.pdf>
34. <https://www.girisudecris.ro/documente/8e33b7dc8e66ba941a73760e653e207c.pdf>;