

ANALYSIS OF THE DYNAMICS OF ORGANIC AGRICULTURE IN THE EUROPEAN UNION WITH AN EMPHASIS ON ROMANIA

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Abstract

The organic farming system emerged in the context of sustainable agricultural development, contributing to the promotion of an agricultural system that protects the environment. The specific practices of ecological agriculture contribute to the protection of biodiversity, to the maintenance of soil fertility, to the reduction of soil erosion, to the reduction of pollution of water resources, and to the reduction of greenhouse gas emissions. Also, in organic farming, energy consumption is reduced because this farming system is based on practices that require a lot of manual labour compared to conventional agriculture that consumes more energy. The European Commission demands, through the European Green Pact – Farm to Fork, that, by 2030, 25% of European agriculture should be organic. Based on these considerations, the authors of this paper carried out a study on the evolution of organic agriculture in Europe with an emphasis on Romania to analyse whether this objective proposed by the EU is achievable or not. The result of the analysis highlights that it is unlikely that this particularly ambitious goal will be achieved by 2030, noting that, in 2021, only 4.3% of the agricultural area cultivated in the ecological system.

Key words: organic agriculture, farms, România, evolution

INTRODUCTION

The development of human society, population growth, culture progress, and particularly modern sciences and technologies progress have led to the improvement and diversification of technical activities and of the production of material goods. In this context, society determines the appearance and growth, at an alarming rate, of numerous harmful substances with negative effects on the living, on the natural ecological balance, contributing to the pollution and degradation of water, air and soil. We find that, in the last decades, through various activities, man has become an important factor in environmental pollution.

With the important progress registered in the economic and social development of

humanity of the last century, agricultural activities have often produced imbalances of natural systems and has created environmental problems. The degradation of water, flora, fauna, and soil have direct effects on living things, with serious and, sometimes, irreversible repercussions on people. Agricultural activities can produce pollution by practicing intensive agriculture systems, using high-energy industrial technologies, using excessively chemical fertilizers, insecticides, fungicides, and herbicides or other chemicals. The economic and social evolution of the current period is in close correlation with the degree of development of agriculture, with its possibility to ensure the availability of food for the growing population, including raw materials for the processing industry [11].

Intensive agriculture will have an increasingly negative impact on the environment. In these conditions, the organic farming system has an important role in the sustainability of food production, having important contributions in reducing the dependence of agricultural production on the high consumption of pesticides, in reducing the negative effects of excess nitrogen and in reducing greenhouse gas emissions. In this context, organic agriculture becomes an agricultural production system with the clear objective of

maintaining the long-term sustainability of the entire system [3, 13, 19].

In general, Romania's agricultural lands are considered among the most fertile in Europe, due to all physical and chemical elements in the soil, which determines the growth of plants, and to the texture of the soil, the humus content, the soil reaction, the saturation in bases, salinity, hydro-physical character, etc., which creates favorable premises for organic farming.

Table 1. European Green Pact Objectives

The European Green Pact	Objectives Farm to Fork 2030	European Agriculture – 25% organic	Food loss and waste prevention
		Reducing the use of chemical fertilizers up to 20%	Sustainable food production
		Reducing the use of pesticides up to 50%	Sustainable food processing and distribution
		Reducing the use of antibiotics by 50%	Sustainable food consumption
		Reducing nutrient losses up to 50%	

Source: own construction based on [6, 4, 1].

The organic farming system requires the observance of certain agricultural exploitation rules, which are based on principles that should maintain diversity and ensure environmental protection. In organic farming, they forbid the use of genetically modified organisms, the use of growth hormones, the use of ionizing radiation, while the use of antibiotics and chemical fertilizers, and of insecticides and herbicides is restricted. All substances used in organic farming to control weeds, diseases and pests should be approved by the European Commission in order to be used in organic production [1].

In this regard, the EU regulates organic production at the Union level by the Regulation (EU) 2018/848 of the European Parliament and of the Council on Organic Production and Labelling of Organic Products, a regulation that “should harmonize the norms on organic production for all the products that enter its scope and should provide detailed production rules for different product categories” [15].

The aim pursued in this scientific work is to analyze the evolution of the ecological agriculture system in Romania, the possibilities of expanding and developing

agriculture in an ecological system correlated with the European provisions and with the available land resources of Romania.

In order to achieve the goal, we established the following stages of the research:

- a) Study on Romania's land resources and the situation of ecological agriculture in Romania.
- b) Study on the evolution of organic farming in the context of EU policies.

MATERIALS AND METHODS

The research methodology for achieving the specific objectives included the statistical analysis of the primary data using, as a working tool, the Microsoft Excel analysis program (tables, graphs). For the analysis, statistical methods have been used for comparisons, structures, and dynamics. One of the methods used to prepare the gross analysis material was the documentation of the official databases provided by the National Institute of Statistics (INS – Tempo Online, Statistical Yearbooks, General Agricultural Census 2020) and data, information bulletins, and communiqués published by the Ministry of Agriculture and Rural Development

(MARD), as well as different publications or complementary information taken from the Internet.

RESULTS AND DISCUSSIONS

Study on Romania's land resources and the situation of the ecological agriculture system in Romania

Romania has important agricultural resources among the countries of the European Union.

Regarding the agricultural area used, Romania occupies an important position, the sixth place at the EU level.

The agricultural area of the 28 EU Member States (including the United Kingdom) was almost 175 million ha (2013), which means an average area of 16.1 ha per agricultural holding. Most agricultural farms were registered in Romania (3.6 million), a country that owned one third (33.5 %) of the total EU farms of 10.8 million. The largest farms in EU member countries, with an average size of 133 ha were registered in the Czech Republic.

Six Member States reported average areas of less than 10 ha, the smallest means being recorded in Romania, Cyprus, and Malta [8, 9].

Through the land resources it has, Romania can develop different agricultural systems, including ecological agriculture, which contribute to the protection of the environment and the production of food with a higher value from the perspective of ensuring the health of consumers, through the use of natural or derived substances natural [2, 7, 14]. According to the last General Agricultural Census 2020, Romania, has an agricultural area of 12,763 million ha, of which arable land represents 8.565 million ha, i.e., 67% of the country's agricultural area. Pastures and meadows cover an area of 3.7 million ha (29.2%), permanent crops cover 344 thousand ha (2.7%), family gardens cover 124 thousand ha (0.97%), and greenhouses and solariums cover 6 thousand ha (0.13%) (Fig. 1).

The analysis of the statistical data in dynamics shows that the agricultural area of Romania of 12.8 million ha is declining compared to 2002 by 1.168 million ha, as a result of removing

from the agricultural circuit of important areas of agricultural land.

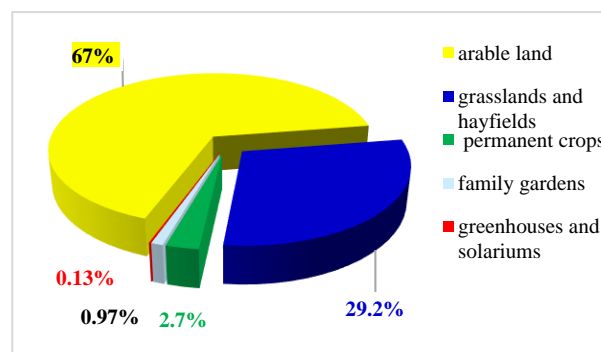


Fig.1. Structure of agricultural land in Romania
Source: own construction based on [20, 16].

The reduction of land areas by including them in the urban area, (especially the metropolitan area of the municipalities and the capital, Bucharest) represents a phenomenon found in areas with higher productivity, while changing the category of use of agricultural land to the forest is common in disadvantaged areas. There is a major difference between rural and urban areas, residents living in rural areas are marked by a significantly higher level of poverty and lower standard compared to inhabitants living in urban areas. In this situation, organic farming would be an activity of diversification and growth of the revenues of the inhabitants from the poorer areas of Romania (Fig. 2). The national land resources are favorable to the development of a competitive and sustainable agriculture, but the laws regarding land property adopted after 1990 caused an excessive fragmentation of the agricultural areas. In the last 10-15 years, we have witnessed a process of grouping the lands and establishing medium and large farms although the small farms remain predominant. Compared to the other Member States of the European Union, Romania has an average size of farms like Malta or Cyprus, island countries with far less agricultural land. The founders of the EU PAC conceived the rural space, primarily as a living environment, both a social-cultural environment and an economic space, based on the agri-food economy but also on the non-agricultural economy on which they can develop all the permanent, continuity-generating activities

that allow the natural sustainable development of rural communities [12].

In Romania, non-commercial small subsistence and semi-subsistence households predominate and comprise over 95% of the number of holdings and over six million hectares of agricultural land. These constitute,

at the same time, agro-food production spaces, family living environments and in many cases rural tourist areas of the best quality, which contribute to maintaining the ecological balance and lend themselves to the development of ecological farming systems, thus maintaining rural communities alive.

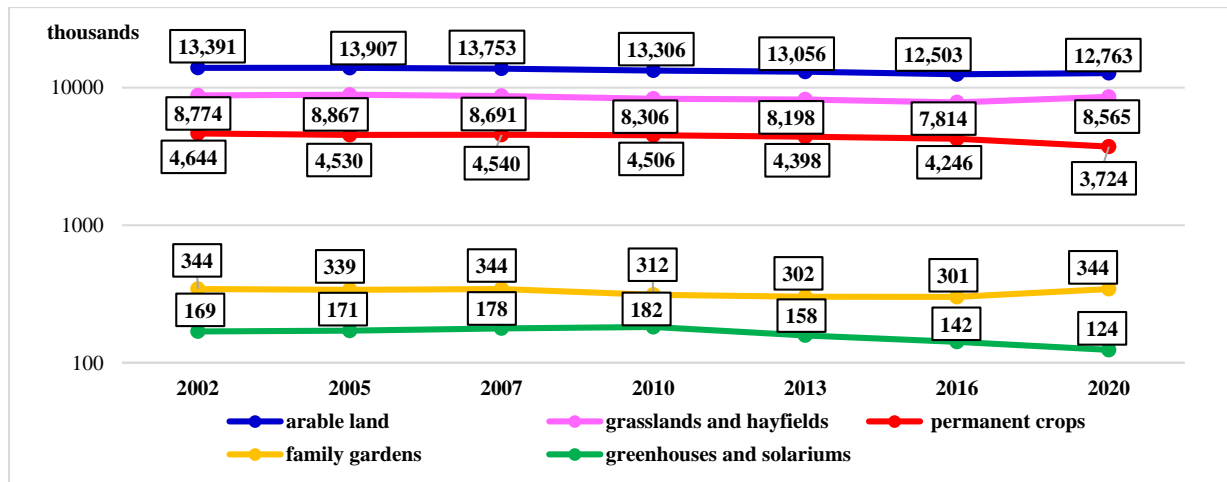


Fig.2. Evolution of agricultural land areas according to use in Romania, 2002-2020.
 Source: own construction based on [20, 17].

Regarding the number and area of the agricultural holdings that operate in Romania, statistical data highlights the existence of small farms in a very large number, in parallel with very large, but numerically small farms (in 2020, 0.87% of the Romanian farms had 38.75% from the agricultural area of the

country. At the same time, small farms operate in Romania (99.13%), without legal personality but owning 61.25% of the agricultural area and hindering the development of agriculture in Romania. (Table 2).

Table 2. Dynamics of the size of agricultural holdings in Romania based on legal status

Nr. Crt.	Indicatori	U.M.	years							
			2002	2005	2007	2010	2013	2016	2020	2020 %
1.	Total agricultural holdings	Thousands	4,485	4,256	3,931	3,859	3,630	3,422	2,887	100%
2.	Utilised agricultural area (UAA)	Thousands ha	13,931	13,907	13,753	13,306	13,056	12,503	12,763	100%
3.	Average UAA/ holding	Ha	3.11	3.27	3.50	3.45	3.60	3.65	4.42	-
4.	Agricultural holdings with legal personality	thousands	23	18	17	31	28	26	25	0.87
5.	UAA of holdings with legal personality	Thousands ha	6,222	4,805	4,787	5,856	5,785	5,576	4,946	38.75
6.	Average UAA/ holding with legal personality	Ha	274.43	263.08	270.45	190.78	207.49	213.64	194.78	-
7.	Agricultural holdings without legal personality	thousands	4,462	4,238	3,914	3,828	3,602	3,396	2,862	99.13
8.	UAA of holdings without legal personality	Thousands ha	7,709	9,102	8,966	7,450	7,271	6,927	7,817	61.25
9.	Average UAA/ holding without legal personality	Ha	1.73	2.15	2.29	1.95	2.02	2.04	2.73	-

Source: own construction based on [20, 17].

In this situation, there is a need to attract young farmers in the rural area, who will take over and modernize/develop the farms, by applying different technologies, including ecological ones, in order to face the pressures of the agro-food markets.

In addition to the positive aspects related to environmental protection, organic farming has an important role in the social and economic sustainability of rural communities.

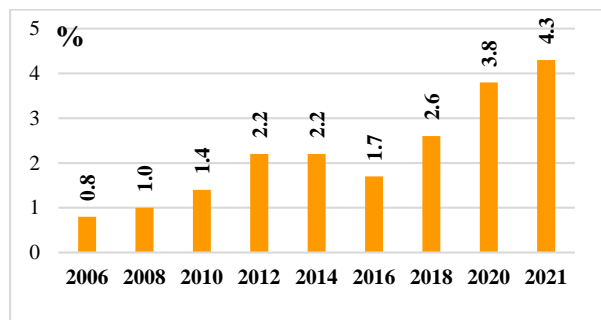


Fig. 3. Evolution of the share of organic farming areas in Romania.

Source: own construction based on [5, 6].

In 2006, the areas cultivated in an ecological system in Romania occupied a share of only 0.8% of the agricultural area of Romania, reaching in 2021 to occupy an area of 4.3% (Fig. 3), with all the financial efforts from the EU through the PAC.

Organic agriculture has registered a constant development in Romania, as a result of the financial support granted through the PAC-Pillar II. During the 2007-2013 programming period, organic agriculture was supported through the support granted under Measure 214 – Agro-environmental payments, package 5 – organic agriculture from PNDR 2007-2013 in order to maintain certified organic production.

The support of organic agriculture continued during the 2014-2020 programming period through the implementation of Measure 11 – organic agriculture from the PNDR, which supports active farmers registered in the organic agriculture system, both for the operations carried out in order to convert to organic agriculture (submeasure 11.1) as well as for maintaining certification in ecological agriculture (sub measure 11.2). This support will also continue through the 2023-2027 National Strategic Plan (PNS) [18].

In Romania, between 2010 and 2021, the areas cultivated organically increased from 182,706 ha to 578,718.45, (Fig. 5).

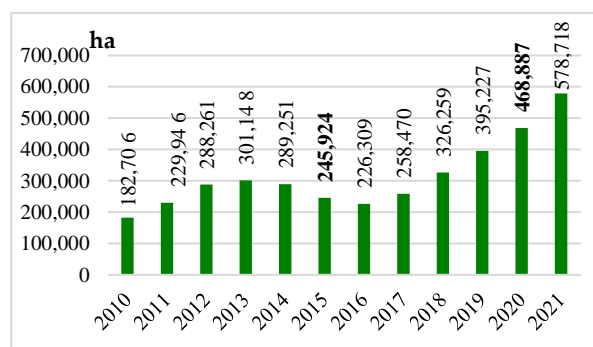


Fig. 4. Dynamics of ecologically cultivated in Romania (ha).

Source: own construction based on [20, 5, 6, 1].

According to the Ministry of Agriculture and Rural Development, the area cultivated in an ecological regime in Romania increased, in 2021, by 109,831 ha compared to year 2020.

Of the 578,718 ha of organically farmed area, 344,541 ha were fully converted and the remaining 234,177 ha were under conversion. In 2020, in Romania, of the total area cultivated organically, 291,629 ha were arable crops, 155,038 ha were permanent crops and 22,221 ha were permanent meadows.

Related to the operators of organic products in Romania, at the level of the Ministry of Agriculture and Rural Development, various measures (compliant with European standards), have been established, which support these operators.

A code of best practices related to climate change and its effects on agriculture is published on the ministry's website, as well as a series of information related to organic agriculture, which ensures easy access for those interested in information related to the reconversion and certification procedure, issues related to national and community legislation, etc.

The control and certification of organic products is currently ensured by private inspection and certification companies [15]. They are approved by the Ministry of Agriculture and Rural Development, based on the criteria of independence, impartiality and competence established by [10]. Ministry of Agriculture and Rural Development approval

of inspection and certification bodies is necessarily preceded by their accreditation by a body qualified for this purpose. Also, every year the list of certified operators in organic agriculture is published [18].

Among them are certified operators who have benefited from expertise and technology from abroad. We want to emphasize the role of FDI in the development of organic agriculture. Current economic research emphasizes the link between foreign direct investment, exports and economic growth. Recent analyzes have highlighted the role of exports and foreign direct investments in stimulating economic expansion, a fact that also manifests itself in the ecological agriculture segment. It is an economic reality that exports of organic products contribute to economic growth.

Figure 5 shows the dynamics of certified operators in Romania, in organic agriculture.

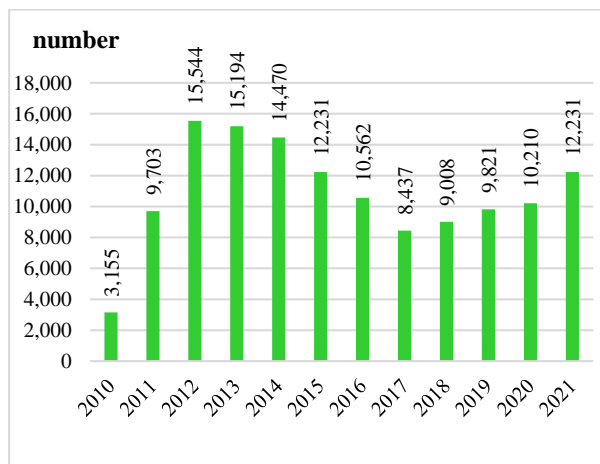


Fig. 5. Dynamics of operators in Romania certified in organic agriculture.

Source: own construction based on [20, 5, 6, 1].

Trends in organic farming in EU countries

According to statistical data, the area cultivated in organic mode has increased considerably.

In the year 2021, at the level of the European Union, 15,639,063 ha were cultivated in organic regime, which represented 9.63% of the cultivated area of the EU. Romania contributed significantly to the increase of the cultivated area in organic regime, a country ranking seventh at the EU level in terms of

cultivated area after France, Spain, Italy, Germany, Austria, and Sweden (Fig. 6).

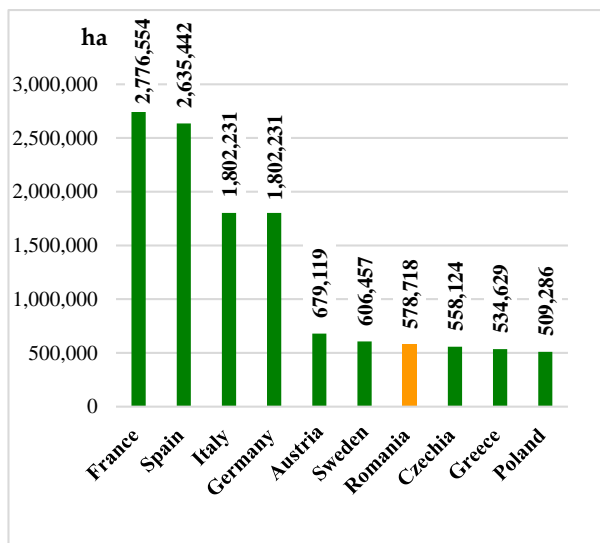


Fig. 6. The first 10 EU countries with organic cultivated areas, 2021.

Source: own construction based on [20, 5, 6, 1]

The share of the areas cultivated organically of the total agricultural land per countries is presented in Figure 7.

Although the European Green Pact *Farm to Fork* requires that, by 2030, European agriculture is 25% organic, the foreseen statistical data shows that most of the countries in the EU will hardly reach this value.

In 2021, there were almost 380,000 organic producers and more than 82,000 processors were operating in the EU (Table 3).

Table 3. Organic operators in EU and in Romania, 2023

Indices	EU States	Romania	
		No.	%
Producers	378,226	11,562	3.00
Processors	82,500	209	0.25
Importers	6,378	34	0.53
Exporters	2,404	25	1.04

Source: [6].

Among EU countries, Austria had, in 2021, a share of 26.5% of agricultural land cultivated organically, all other countries had less than 25% (Fig. 7).

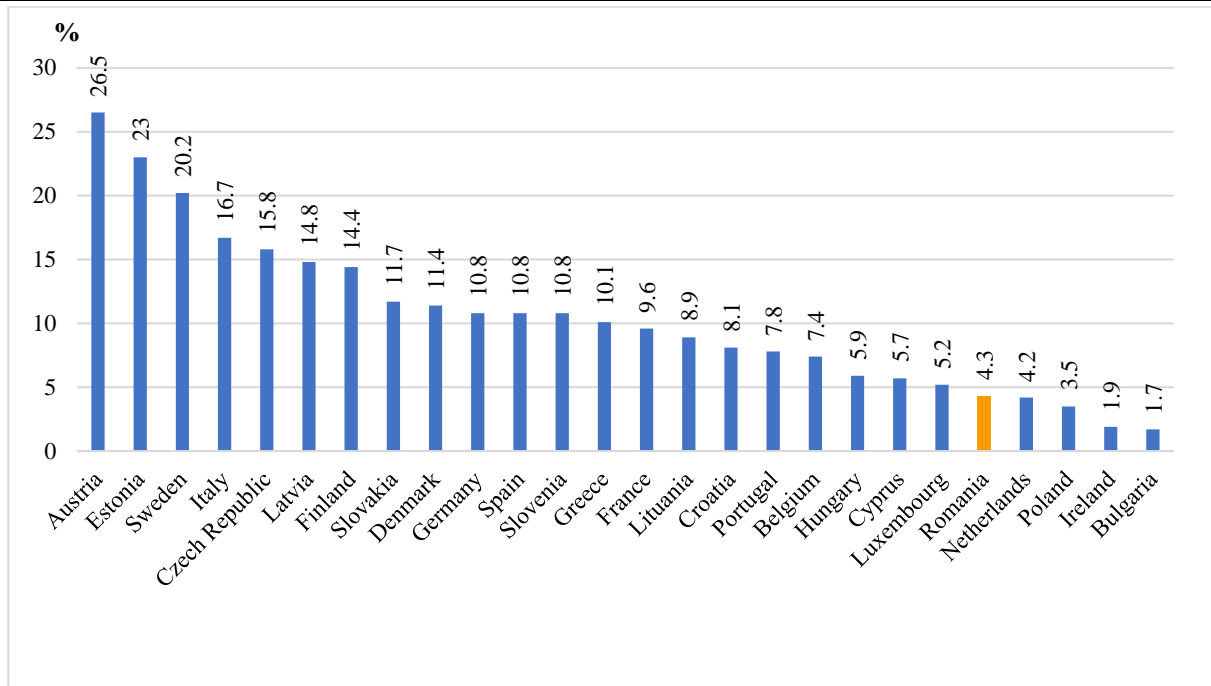


Fig. 7. Share of organically cultivated areas in the EU, 2021.
 Source: own construction based on [5, 6].

Italy is the country in the EU that has the most organic producers 75,874 (17%) followed by France 58,413(13%), Spain, 52,861(11%), Germany 36,307(8%), Greece 29,869 (7%), Austria 23,961(6%), Poland 18,598 (4%), and Romania 11,562 (3%) (Fig. 8).

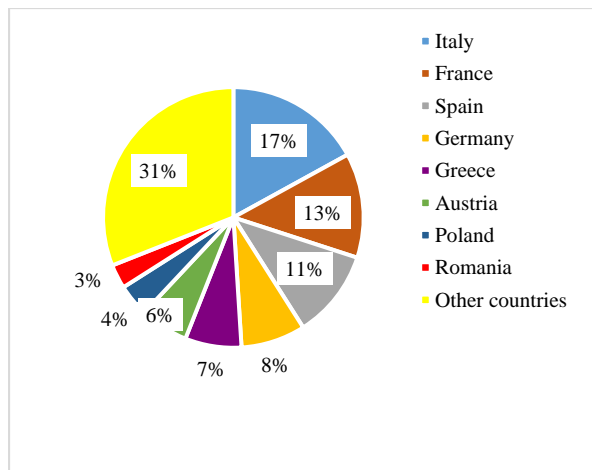


Fig. 8. Share of organic producers per EU countries, 2021.
 Source: own construction based on [6].

The data in Figure 9 shows that almost 80% (more precisely 78%) of organic processors are in Italy (27%), Germany (22%), France (22%), Spain (7%) and Romania with a weight of just 0.25%. In Romania because of the lack of processing facilities, in general, but especially in the field of organic

production, the raw organic material is exported.

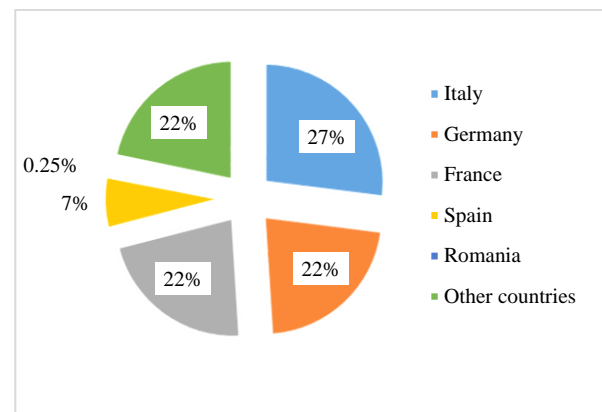


Fig. 9. Share of organic processors per EU countries, 2021.
 Source: own construction based on [6].

According to statistical data, the largest number of importers of organic products (2021) at EU level are: Holland, Germany, Belgium, France, Italy, Sweden, Spain, Ireland, Denmark, and Poland. The most important countries in which Romania exports organic-certified products (mostly raw material) are Italy, France, Germany, Austria, USA, and Japan (2023). The market for organic products has increased more slowly than the area cultivated organically. At the level of the EU countries, retail sales of

organic products reached 46,665 billion euros, Romania ranking before Bulgaria, Hungary, and Portugal with 41 million euros.

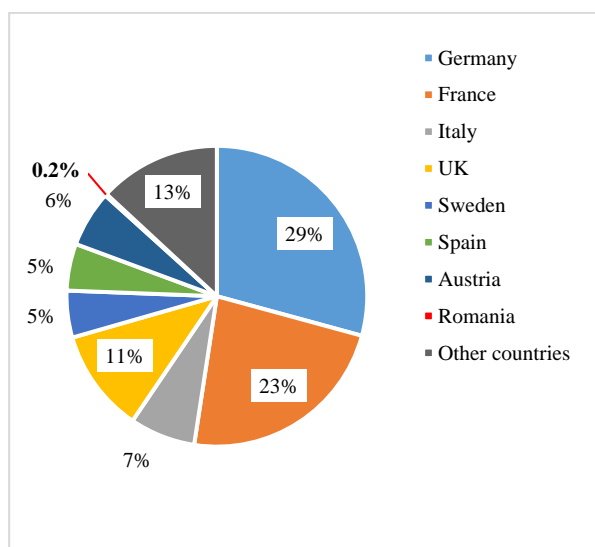


Fig. 10. Top EU countries in organic retail sales.
 Source: own construction based on [6].

By far, it is clear that Germany and France record the highest levels of market share at EU level with 29% (Germany) and 23% (France). Romania had 0.2% of the retail sales of organic products (Fig. 10).

Regarding the consumption of organic products per inhabitant, we note that in the EU there is an average of 104.3 euros/inhabitant. Denmark ranks first in this indicator with 384 euros/inhabitant. Although in Romania there are increases in the consumption of organic products, it currently represents around 2 euros/inhabitant, according to statistical data [15].

The transition period to organic farming is a maximum of two years for annual crops and a maximum of three years for perennial crops.

Support is granted in the form of compensatory payments calculated in the form of standard costs based on the assessment of additional costs and income losses resulting from the application of practices specific to organic farming.

The beneficiaries of this support must meet the following criteria: be a farmer, user of an agricultural area located on the territory of Romania, identifiable in the Integrated Administration and Control System (IACS); the farm must have an area of at least 1 ha, and the plots must not be smaller than 0.3 ha

and for vineyards and orchards, fruit bushes, hops, fruit and wine nurseries of 0.1 ha; is registered, every year and requests support, according to the legal provisions, as an operator in organic agriculture; undertakes to keep a record of agricultural activities related to the implementation of commitments.

The compensatory payment granted through the PAC represents 100% non-reimbursable public support. The methodology for calculating compensatory payments was developed in 2022 as part of the Study on the establishment of the technical framework and standard costs that are the subject of interventions regarding organic agriculture from the National Strategic Plan 2023-2027. The compensatory payments granted for the application of ecological agricultural practices during the conversion period are calculated in the form of standard costs for each of the six proposed packages: Package 1 – agricultural crops on arable land (including fodder plants) located in conversion to organic farming – 293 euros/ha/year; Package 2 – vegetables (including potatoes) under conversion to organic farming – 500 euros/ha/year; Package 3 – orchards in conversion to organic farming – 620 euro/ha/year; Package 4 – vineyards in conversion to ecological agriculture – 530 euros/ha/year; Package 5 – medicinal and aromatic plants under conversion to ecological agriculture – 365 euros/ha/year; Package 6 – option 6.1 – permanent meadows under conversion to ecological agriculture – 143 euros/ha/year; Package 6 – option 6.2 – permanent meadows under conversion to ecological agriculture with commitment to agro-environment and climate – 39 euros/ha/year.

CONCLUSIONS

The agricultural resources of Romania represent an important share of national wealth. In Romania, compared to other states of Europe, agriculture is one of the most important branches of the economy, with a priority role in the restructuring and modernizing of the entire economic activity, precisely through the environment and the quality of agricultural land.

Romania records the largest number of EU agricultural farms, of 2,887 million ha, with a very small average size of 4.42 ha. Agricultural farms without legal personality have 2,862 million ha, with an average area of 2.73 ha and with 7.817 million ha of agricultural land. These small farms are suitable for the development of organic farming, thus contributing to the sustainable development of rural communities.

Although in the last years, in Romania the organic farming system had an upward trend, the areas cultivated organically did not exceed, in 2021, 5% of the total agricultural area used. In this situation, of course we ask ourselves the following question: How can Romania will contribute to reaching the indicator imposed by the European Green Pact, Farm to Fork? The achievement of the objective imposed by the EU will be very difficult by Romania by 2030, because from 2006 the share cultivated organically was 0.8% and it reached, in 2021, after 15 years, a share of only 4,3%. In this situation, in order to reach the proposed indicator in Romania, it should record an increase of 2.59% annually to reach the 25% area cultivated organically (imposed by the European Commission's objectives) from the total organically-cultivated area.

More significant growths of the areas cultivated organically in Romania took place after 2016, when the area was practically doubled from 226,309 ha to 578,718 ha in 2021. The acceleration of the growth of organic areas is due to the national program of rural development -The National Rural Development Plan 2014-2020, focused on environmental protection through environmental and climate measures (allocation for environmental and climate measures during the 2014-2020 programming period exceeded 30%, respectively 2,622 million euros from the total allocation of 9,622 million of euros, through the European Fund for Agriculture and Rural Development).

Organic farming received through measure M.11 Organic farming, the amount of 236 million euros, thus aiming to improve the balance between economic development and

sustainable use of natural resources, but also to maintain and increase the attractiveness of rural areas, as basic elements in the diversification of economic activities. In 2021, the area cultivated organically increased by 23.40% compared to 2020 (46,827 ha), following the trend of increases in the EU countries that have 15,639 million ha cultivated organically.

Compliance with the rules in the field of organic agriculture determines:

- Increasing the confidence of consumers in the organic products produced at the EU level by strengthening the control system of organic products.
- Encouraging small farmers to practice organic farming through new norms for producers who facilitate the passage of small farmers to this agricultural system.
- Compliance with quality standards by all EU traders by introducing new norms for imported organic products.
- Diversification of commercialized organic products.

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