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## Organic farming and biodiversity

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# ORGANIC FARMING AND BIODIVERSITY

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**Abstract:** *Organic farming is a sector with real development potential in Romania, being an essential instrument on the way to environmental protection, through the conservation of soil, improvement of water quality and support to biodiversity. The present paper aims to analyse the evolution of organic farming, both at national and county level. Year by year, the areas under organic farming and the number of organic operators, mostly farmers, have increased. The counties Tulcea and Timiș have the largest areas under organic farming, and most operators in organic farming work in the counties Sălaj and Satu Mare. The organic farming provides a favorable framework for maintaining biodiversity, using friendly, economically and socially efficient practices for farms, generating modern attributes for rural communities, and offering a different lifestyle and a different quality of life for the entire society.*

**Keywords:** *organic farming, nature protection, biodiversity*

**JEL Classification:** Q15, R1

## INTRODUCTION

Food security must be a priority in any scenario, but at the same time there is a need for healthy products, and biodiversity on cultivated areas is the best barometer for healthy products. Where an environmentally friendly agriculture is practiced, both the quality of obtained products and the biodiversity are at a high level.

The practice of increasingly intensive agriculture is one of the main causes of biodiversity loss and ecosystem degradation, which are among the biggest threats facing humanity, according to the World Economic Forum. In conventional farming, there is a decline of biodiversity as a result of specialization, intensification, absence of mixed farms, lack of uncultivated land and mainly of pesticide use. The organic farming practice on increasingly large areas helps to create a more varied landscape and ensures greater biodiversity.

Through the Common Agricultural Policy, financial support for organic farming has been provided in all the EU member states. The new CAP regulations were adopted by the European Parliament in Plenary only on 23 November 2021. The delegated and implemented acts of these new CAP regulations (2023–2027) were voted in the first quarter of the year 2022 and the regulations are active from 1 January 2023 to 31 December 2027. Organic farming can make a decisive contribution towards a sustainable food and farming sector while satisfying citizens' preferences. With the right incentives in both pillars, many more farmers could make an even larger contribution to the environment, climate and rural communities. The new eco-schemes account for 25 per cent of the First Pillar's budget. These eco-schemes are mandatory for the Member States but voluntary for farmers; this is less binding than the current greening measures. Eco-schemes can offer a good opportunity to compensate farmers whose farming practices benefit biodiversity and the environment. The rest of the CAP's new green architecture consists of nine good agricultural and environmental conditions (GAECs), and 35 per cent of the Second Pillar's budget is dedicated to agro-environmental and climate measures (AECMs). The organic movement defended ringfencing of at least 70 per cent of the entire CAP budget across both pillars to ensure a level playing field and to avoid a race to the bottom for the climate and environment. With the European Green Deal (European Commission 2019c) and the publication of the EU Farm to Fork (European Commission 2020a) and Biodiversity

Strategies (European Commission 2020b), the European Commission has put forward clear objectives for transitioning to sustainable food systems by 2030.

In Romania, organic farming has received support under NRDP since the first programming period 2007-2013, through Measure 214 – agro-environmental payments, the objective of which was to contribute to the sustainable development of rural areas by encouraging farmers to introduce or continue the production methods meant to protect the environment, biodiversity, water, soil and rural landscape. Payments were provided for high nature value grasslands, traditional farming practices, important grasslands for birds and green crops.

In the programming period 2014-2020, the support to organic farming continued through Measure 11 – Organic farming, with the two sub-measures, 11.1 – Support for conversion to organic farming methods and 11.2 – Support for maintaining organic farming practices. The financial allocation of the measure in the period that was extended until 2023 is 479.37 million euros (MADR, 2023). Funding was provided for some other measures that aimed to encourage and support the production of organic products priority being given to projects through which applicants aim registration in the organic farming system. Thus, through investment measures, such as “Investments in agricultural holdings”, “Support to investments in processing/marketing of agricultural products”, greater priority was given to projects through which applicants aimed registration in the organic farming system. At the same time, under the measure “Support to setting up of young farmers”, the beneficiaries of projects by which they committed themselves to have the entire holding registered in the organic farming system benefitted from an additional payment of 20,000 euros.

In the next programming period, through the National Strategic Plan 2023-2027, a total financial allocation of 389.12 million euros for organic farming is foreseen, namely 162.6 million euros for the financing of conversion commitments and 226.52 million euros (MADR, 2023) for the financing of commitments in the period of maintaining organic farming practices.

## **STATE OF KNOWLEDGE**

Organic farming contributes to “combating climate change, stopping loss of biodiversity and promoting sustainable consumption” (FiBL&IFOAM, 2022). According to the latest report of FiBL (Research Institute of Organic Agriculture), in the year 2020, “74.9 million hectares were under organic agricultural management worldwide”, out of which Oceania had 35.9 million hectares, Europe 17.1 million hectares, Latin America 9.9 million hectares, Asia 6.1 million hectares, North America 3.7 million hectares and Africa 2.2 million hectares. In the global ranking of the above-mentioned report, in the year 2020, Romania ranked 20<sup>th</sup> by the number of hectares cultivated under organic farming system, the first three positions in the ranking being occupied by Australia (35.7 million hectares), Argentina (4.5 million hectares) and Uruguay (2.7 million hectares). In the European Union, the countries with the largest areas under organic farming were France (2.5 million hectares) and Spain (2.4 million hectares), which ranked 5<sup>th</sup> and 6<sup>th</sup> respectively in the worldwide ranking (FiBL&IFOAM, 2022). In the European Union, with a total area of 14.9 million hectares under organic farming, France, Spain, Italy (2.1 million hectares) and Germany (1.7 million hectares) were on top positions, more than half of the area under organic farming being found in these countries. According to the same report, Romania ranked 12<sup>th</sup>.

Organic farming “produces safe and nutritious food, while protecting the environment and using natural resources in a sustainable manner, ensuring a healthy food system for Romania and organically certified food supply with high value added” (MADR, 2023).

In the European Union, the “Farm to Fork” and “Biodiversity” strategies propose actions for combating biodiversity loss, protection of human and nature health and supporting all actors in the agri-food chain.

Ensuring healthier and more sustainable food for Europe is the main objective of the EU’s “Farm to Fork Strategy”, and the main objectives regarding food security and safety are the following:

- Ensuring a supply of sufficient, affordable and nutritious food products, within planetary boundaries
- Cutting by half the use of pesticides, fertilizers and sale of antimicrobials
- Increasing the land areas under organic farming
- Promoting more sustainable food consumption and healthy diets
- Reducing food loss and waste
- Combating food fraud along the food supply chain
- Improving animal welfare

The plan of action for the development of organic production, part of the “Farm to Fork” Strategy, presents a set of actions to increase the share of organic farming in the EU, and its main objective is to boost organic production to achieve the target of minimum 25% agricultural land under organic farming in the EU by the year 2030. The EU member states are encouraged to develop national plans for organic farming. The plan of action is divided into three inter-connected axes that reflect the supply chain structure and the ambitions of sustainability objectives of the European Green Deal: Axis 1 – Stimulating demand and ensuring consumer trust; Axis 2 – Stimulating conversion and strengthening the entire value chain; Axis 3 – Ecological models that lead by example: improvement of organic farming contribution to environment sustainability. The three axes will be supported by 23 actions, continuing some of the successful actions from the period 2014-2020, and proposing a set of new actions and mobilizing different financing sources. To achieve the plan, member states were invited to set national targets for organic farming and generally to have ambitious targets in terms of organic production in their strategic plans. For Romania, in the year 2030, the utilized area under organic farming system could reach 800,000 ha, i.e. 6% of the utilized agricultural area (MADR, 2023).

The EU Biodiversity Strategy for the year 2030, adopted with the “Farm to Fork” Strategy, support each other, bringing nature, farmers, businesses and consumers together. The Biodiversity Strategy includes a series of objectives and commitments to be achieved by 2030 at the latest and is the cornerstone of nature protection in the EU, being a key element of the European Green Deal. The following are among the main actions to be taken:

- Creating protected areas to cover “30% of the EU land and sea area”, expanding the coverage of existing Natura 2000 protected areas;
- Restoring degraded ecosystems on the EU’s territory through a series of commitments and specific measures, including “reducing the use of chemical fertilizers and pesticides by 50% and operating at least 25% of agricultural land under organic farming system and planting 3 billion trees”;
- Facilitating the transformational change by which a “new EU governance framework for biodiversity will be established, with clear obligations and milestones”;
- Creating an ambitious global biodiversity framework.

The organic farming impact on environment and biodiversity has received the most attention from researchers, and while some still dispute the ecological benefits of this type of agriculture (Colman R., 2000), there is a growing consensus that it does provide a number of environmental

benefits as compared to conventional agriculture (Petersen et al., 2006; Cobb et al., 1999). When comparing biodiversity between organic and conventional farming systems, a variety of studies have found a higher total abundance of arthropods, birds, plants and soil organisms on organically farmed land (Crowder D. W. et al, 2012). Other studies showed that “the species richness in organic farming is up to 34% higher than in conventional farming” (Smith O. M. et al, 2019). A significant increase in nematode abundance and thus positive effects on biological soil quality were observed in organic farming systems compared to conventional systems (Puissant, J. et al, 2021).

Organic crop production farms spend less on fertilizers and plant protection products than conventional farms. “Organic arable crop farms save 75-100% on plant protection product costs per hectare and 45-90% on fertilizer costs per hectare compared to conventional farms” (EU, 2023). As a result, organic farming is gaining ground and is continuously growing, supported by the increasing demand of consumers, who are willing to buy bio products to stay healthy. All these add to the requirements of society for sustainable agriculture development, as well as the multitude of favorable effects of organic agriculture at the level of farm, environment and biodiversity.

## MATERIAL AND METHOD

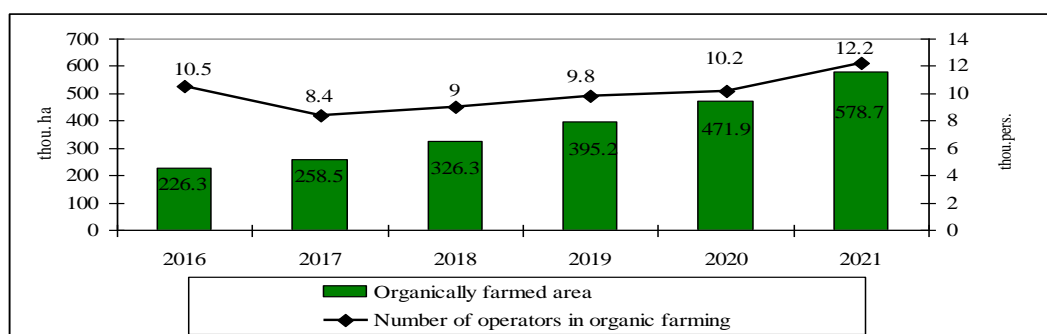
The present study intends to be an analysis of organic farming in Romania, in close relation to available statistical data from the Ministry of Agriculture and Rural Development (MADR). According with the existing data the analysis at national level was made for the period 2016-2021 and the analysis at county level, only for the year 2020.

The methodology used for the purpose of this study consisted of two types of instruments – data collection and quantitative analysis. Thus, the data were processed, analyzed and interpreted and they formed the necessary set of information for carrying out the present diagnosis analysis of the existing situation of organic agriculture in Romania.

## RESULTS AND DISCUSSIONS

In the period 2016-2021, in Romania, the organically farmed area increased 2.5 times. In the year 2016, the area under organic farming system was 226.3 thousand ha, to reach 578.7 thousand ha in 2021, accounting for 4.5% of total utilized agricultural area in Romania.

In the year 2016, there were 10562 certified operators in organic farming, as a result of available funds allocated to this sector. A decreasing trend could be noticed, one possible explanation being that producers’ expectations did not always correspond to reality, but in the year 2021 their number was expected to reach the maximum in the analyzed period, namely 12231.



**Figure 1. Evolution of cultivated area and operators in organic farming**

Source: MADR, 2022

In the investigated period, more than 94% of organically certified operators were farmers, followed by traders and processors of organic products. The low share of processors of agricultural products reveal that the largest part of organic production is exported under the form of raw material to other countries. That is why the main objectives for the development of organic farming should be the increase of organically cultivated areas and of organic products with high value added, and in particular the processing of these products to obtain organic products with high market value.

Romania is well-known for organic products such as honey, walnuts, aromatic herbs and forest fruits, sea buckthorn in particular, yet official data indicate a different situation.

In the year 2016, cereal prevailed in the structure of organic crops, with 33.2%, followed by pastures and hayfields (25.5%) and industrial crops (23.6%). In the year 2021, there was a change in the hierarchy, with pastures and hayfields ranking first (37%), followed by cereals (24%) and industrial crops (19.8%). The area under pastures and hayfields increased 3.7 times in 2021, as against their area in 2016, while the area under cereals only slightly increased in the analyzed period. The increase of the area under organic pastures and hayfields is due to subsidies provided to farmers for these areas.

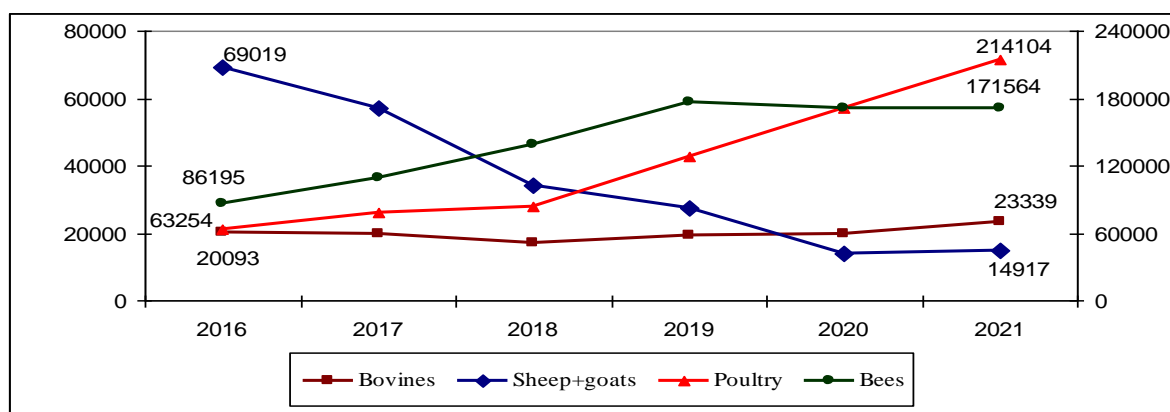
**Table 1. Structure of crops in organic farming**

- thousand ha -

	2016	2017	2018	2019	2020	2021	2021/2016 Difference
Area	226.3	258.4	326.3	395.2	471.9	578.7	352.4
Cereals	75.2	84.8	114.4	126.8	134.2	139.4	64.2
Grain pulses	2.2	5.0	8.8	7.4	5.7	5.9	3.7
Roots and tubers	0.7	0.7	0.5	0.5	0.4	0.3	-0.4
Industrial crops	53.4	72.4	80.2	78.4	91.6	114.4	61.0
Green plants	14.3	20.4	28.3	37.7	53.8	74.7	60.4
Other crops in arable land	0.2	0.08	0.1	0	0	0.2	0
Vegetables	1.2	1.5	1.0	0.8	0.8	1.2	0
Permanent crops	12.0	13.2	18.6	22.2	22.2	21.2	9.2
Pastures and hayfields	57.6	50.7	66.9	115.4	158.1	214.7	157.1
Land left uncultivated	9.5	9.7	7.6	6.1	5.2	6.8	-2.7

Source: MADR, 2022

In the livestock production sector, bovines were the most numerous organically certified animals, and their number followed an increasing trend. In the sheep and goat sector, the situation was different, as their number experienced a dramatic decline in the analyzed period, probably due to the decline of sheep and goat herds.



**Figure 2. Evolution of number of organically certified animal herds**

Source: author's processing based on MADR data, 2022

The organically certified animal production includes dairy products and eggs in particular.

The organic cow milk production is quite stable, and the main 4 companies producing bio certified dairy products in Romania are: Lactalis Group, which includes the companies Albalact, Covalact, Rarăul, Lactate Harghita and LaDorna, followed by Olympus (Dairy Factory Braşov), Hochland and Friesland Campina (Napolact).

The number of organically certified poultry significantly increased, being 3.4 times more numerous in 2021, as compared to 2016, due to the high demand for organic eggs, as well as the possibility for small businesses to launch organic production with low investment and a stable cash flow. In Romania, the largest egg producer is Toneli Holding, in the southern part of the country, which produces eggs with code 1 (free range), 2 (on the ground) and 3 (battery cages), as well as organic eggs (code 0), in parallel with conventional production. There are also companies that produce only organic eggs, such as *Ouă de Țară* in the county Arges, which has 50,000 poultry on 20 ha of pastures.

The number of organically certified bee families significantly increased in the analysed period, resulting in the increase of organically certified honey production. According to the data, organic bee honey production was 4480 tonnes in 2021, double compared to that in 2020.

In terms of territorial distribution, in the year 2020, the counties with the largest organic areas were Tulcea (60371.9 ha), Timiș (55896.3 ha), Constanța (32611.6 ha) and Arad (29882.5 ha), and the counties with the smallest organic areas were Ilfov (481 ha) and Dâmbovița (578 ha).

The situation is different if the organically certified area is taken into consideration: thus, the counties with the largest organically certified areas were Tulcea (47756 ha), Timiș (36616 ha), Iași (18858 ha) and Constanța (17651 ha), while the counties with the smallest organically certified areas were Vâlcea (71 ha) and Dâmbovița (211 ha).

In the year 2020, in total area registered in the organic system, 57.4% was represented by the organically certified area, and the remaining 42.6% was the area in conversion. In terms of the share of the already organic certified area in total organic area, Suceava county ranked first, with 90.6%, followed by two counties in the southern part of Romania, namely Călărași and Giurgiu. There were counties where the share of the area in conversion in total organic area was high, with Vâlcea county ranking first, followed by Gorj and Brăila (Annex 1).

In the year 2020, the counties with the largest number of economic operators in organic farming were Sălaj (831) and Satu Mare (829), and those with the smallest number of organic operators were Giurgiu (27) and Ialomița (38). It is worth noting that in the county Mehedinți, all the 51 economic operators registered in organic agriculture were organic farmers.

## CONCLUSIONS

The organic farming has the potential to contribute to the protection of environmental factors, to biodiversity conservation and to fight against climate change, thus providing public goods and at the same time serving a market in full ascent.

Organic farming is a dynamic system in Romania, one of the arguments being that the organic farming area has increased year by year. In the year 2021, the area under organic farming was 2.5 times as high compared to that in 2016, and accounting for 4.5% of the country's total utilised agricultural area. Although it had an oscillating evolution, the number of operators in organic farming was higher in 2021 compared to 2016, but the share of processors in organic farming was very low. The crop structure was dominated by cereals in 2016, and in 2021, pastures and hayfields will take

first place. The increase of the area occupied by organic pastures and hay is due to the subsidies granted to farmers for these areas. Regarding the organically certified livestock, cattle and birds were more numerous, as were the number of bee families, while the number of sheep and goats decreased. As a result, the productions of organically certified cow's milk, eggs and honey were stable and even increased. From the point of view of territorial distribution, in the east and west of Romania are the counties with the largest ecologically certified areas (Tulcea, Timș, Constanța and Arad).

The organic farming practice in Romania has real premises for future development. Farmers who practise organic farming are not necessarily motivated by economic goals, most often their goals are to optimise the interactions between land, animals and plants, preserving the natural flows of nutrients and energy, with the aim to maintain and improve biodiversity.

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**Share of organically certified area and of area in conversion  
in total area registered in organic farming system, by counties, in the year 2020**

County	Share of organically certified area %	Share of area in conversion %
Alba	58.3	41.7
Arad	52.2	47.8
Argeş	31.0	69.0
Bacău	37.0	63.0
Bihor	34.8	65.2
Bistriţa-Năsăud	63.9	36.1
Botoşani	54.1	45.9
Brăila	21.7	78.3
Braşov	51.4	48.6
Bucureşti	87.6	12.4
Buzău	66.8	33.2
Călăraşi	87.1	12.9
Caraş-Severin	43.9	56.1
Cluj	62.3	37.7
Constanţa	54.1	45.9
Covasna	55.3	44.7
Dâmboviţa	36.6	63.4
Dolj	26.4	73.6
Galaţi	60.6	39.4
Giurgiu	80.5	19.5
Gorj	12.5	87.5
Harghita	42.4	57.6
Hunedoara	65.0	35.0
Ialomiţa	68.6	31.4
Iaşi	80.3	19.7
Ilfov	88.5	11.5
Maramureş	53.8	46.2
Mehedinţi	36.3	63.7
Mureş	37.3	62.7
Neaţ	37.5	62.5
Olt	37.0	63.0
Prahova	36.3	63.7
Sălaj	45.5	54.5
Satu Mare	35.8	64.2
Sibiu	50.3	49.7
Suceava	90.6	9.4
Teleorman	53.0	47.0
Timiş	61.9	38.1
Tulcea	79.1	20.9
Vaslui	36.7	63.3
Vâlcea	2.8	97.2
Vrancea	58.4	41.6
<b>Total</b>	<b>57.4</b>	<b>42.6</b>

Source: author's processing based on MADR data