

## The Evolution of the Romanian Organic Agriculture in a Global Context

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### ABSTRACT

Organic agriculture is widely considered an agricultural method that aims to produce food products by turning to natural processes and substances, limiting, in the same time, the impact on the environment. In the last period, there has been an evident growing trend in consumers' preference for organic food products, that determines the agricultural producers and systems to adapt to this demand, by turning to organic agricultural practices. In this context, the aim of this work is to analyse the evolution of the Romanian organic agriculture over a period of 12 years, between 2010-2021, especially regarding the organic cultivated area and crop's structure, having also in view the global context of the agricultural organic sector. The analysis highlighted an important development of the organic area during this timeframe, based, mainly, on permanent grassland, cereals, industrial crops and "other crops", at the end of the interval Romania being among the countries with the highest contribution to the increase of the European organic land area.

**Keywords:** organic agriculture, conventional agriculture, agri-food products.

### INTRODUCTION

In the last decades, agriculture has been facing multiple challenges, ranging from an increased demand for food products driven by population' growth (Kleijn et al., 2019), climate changes, that some scholars find them to be in direct connection with the development of agriculture (MacLaren et al., 2022), changes at the level of consumers' preferences for more organic food products, based on an increased awareness about the health and environmental implications of conventional agriculture (Zejak et al., 2022), but also high social expectations (Koloszko-Chomentowska and Zukovskis, 2017). The response of the agricultural sector to these challenges seems to be not so easy, having to find the right balance between increasing food production, protecting the environment and meeting consumers' concerns and demand for cleaner and healthier products. Over time, the efforts of the academic sector

focused on tackling these challenges pointed out the need for a shift, from the conventional agricultural systems to more sustainable production systems, but also for alternative innovations or agroecological practices (Canwat and Onakuse, 2022; Petcu et al., 2023). In this context, organic intensification emerges as a viable option to meet the overall concerns regarding the costs of conventional farming, while safeguarding food production and providing environmental benefits (Kleijn et al., 2019). It seems that the main role of the organic/organic agricultural systems is to ensure cleaner agri-food products, more suitable for human consumption, in correlation with the conservation of natural and environmental elements (Pătărlăgeanu et al., 2022). Here, we need to make a clarification regarding the concepts of "ecological", "organic" and "biological" agriculture. According to the Romanian Ministry of Agriculture and Rural Development, these are similar terms that

are used in different geographical areas and languages. "Ecological agriculture" in Netherland, "biologic" in France and "organic" in UK, USA and nevertheless, in English language "organic agriculture" it is the term that imposed. In Romania, the official term assigned by the EU for defining this type of agriculture is "ecological agriculture", while other member states use organic or biologic agriculture instead. Nevertheless, they all have to follow the same EU regulations regarding this sector. As for the technical implications of adopting an organic agriculture system, the farmers need to respect, during the production phase, a set of rules: no use of GMO's, of synthetic fertilisers and pesticides, of growth stimulators and regulators, hormones and antibiotics.

Coming back to the main focus of the present paper, the evolution of the organic agriculture, in the last decades, both at European and international level, the market for organic products has grown annually, based on an increased demand that translated into a constant increase of the organic cultivated agricultural areas (Jurjescu et al., 2020). In EU, organic agriculture has been constantly financially supported through the Common Agricultural Policy, that encourages the shift from conventional to sustainable agricultural practices (Koloszko-Chomentowska and Zukovskis, 2017). Also, organic farming is an important objective of the European Commission, aiming to reach the target of at least 25% of agricultural land being cultivated based on organic methods by 2030 (Ursu and Petre, 2022).

In Romania, although agriculture activities go way back in time and traditional agricultural practices share many similarities with organic ones, this domain has been regulated by law only since 2000, along with the harmonization of the legal framework with the specific EU regulations (Brumă, 2015). Since then, Romania has recorded an evident increase as regards the cultivated area and the livestock farmed based on the principles of organic practices (Străteanu et al., 2022) but the dynamics of the organic production is still considered rather slow,

compared to the real development potential (Jităreanu et al., 2022). Moreso, some research studies have highlighted an important gap at territorial level, as regards the development of organic farming in Romania (Brumă, 2015) based on the regions' agricultural profile, where the land occupied by pastures and hays (especially from the hill and mountain areas) holds the largest share in the total organic agricultural area.

## MATERIAL AND METHODS

The main objective of the present paper was to investigate the evolution of the Romanian organic agriculture over a period of twelve years, in terms of the cultivated area and structure of crops, in a global context marked by the growth of this sector.

In this context we have turned to a set of methods including documentation (analysis of scientific literature focused on this subject, at national, European and international level), analysis of data from literature, analysis and processing of data series from official national sources (Ministry of Agriculture and Rural Development in Romania) and from international sources (FiBL&IFOAM - Organics International, The World of Organic Agriculture Reports for 2012-2023), comparative analysis, classification, synthesis, visual representations of indicators and their evolution along the mentioned timeframe.

## RESULTS AND DISCUSSION

Worldwide, during 2010-2021, there has been an evident and constant growth trend of the organic agricultural areas, driven by different factors like increased demand for clean agri-food products, financial support schemes for farmers and growing concerns about the impact of conventional agriculture on the environment. Overall, during this timeframe, the total organic agricultural land (including in-conversion areas) more than doubled in size, from 37,041,004 ha in 2010 to 76,403,777 ha in 2021 (Table 1).

Table 1. Total organic agricultural land (including in-conversion areas), 2010-2021

Region	2010		2021	
	Land-ha	% in total	Land-ha	% in total
Africa	1,075,829	2.9	2,663,983	3.5
Asia	2,778,291	7.5	6,504,211	8.5
Europe	10,002,087	27	17,844,853	23.4
Latin America	8,389,459	22.7	9,870,887	12.9
Northern America	2,652,624	7.2	3,542,140	4.6
Oceania	12,144,984	32.8	35,985,809	47.1
World*	37,041,004	100	76,403,777	100

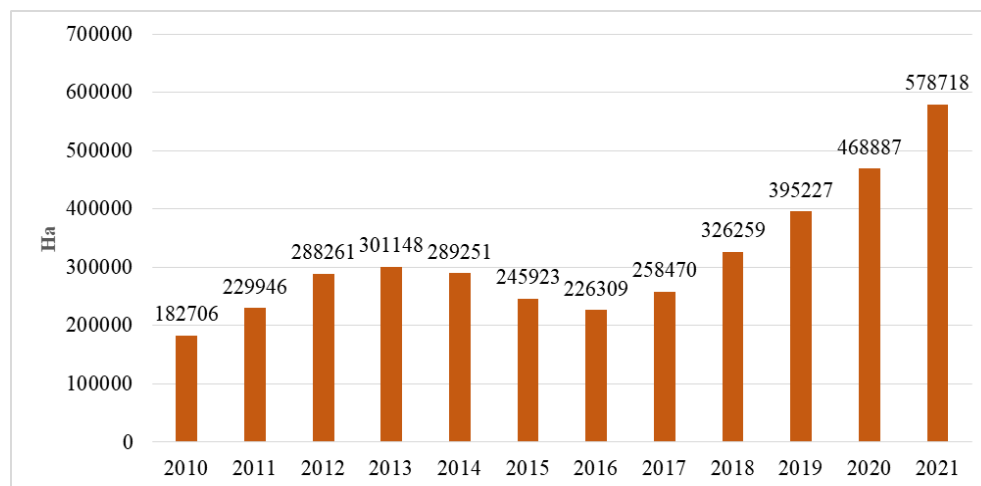
Source: processing based on FiBL survey 2012, 2023.

Note: \* Total includes correction value for French overseas departments.

This significant development of the organic agricultural areas in this interval was supported somehow differently by the world's regions, some of them, like Oceania, standing out as the most dynamic, the organic land area almost tripling, from 12,144,984 ha in 2010 to 35,985,809 ha in 2021. In the same time, other regions, like Latin and Northern America, have registered a lower growth rate, the latter being among the regions with the lowest share in the total organic land in 2021 - only 4.6%. As regards Europe, the strong EU' support for this sector led to a significant increase of the organic agricultural land, from 10,002,087 ha in 2010 to 17,844,853 ha in

2021, representing more than 23% of the global area at the end of the time interval.

In this context, Romania, with an important development potential for organic agriculture, based not only on the specific land and agricultural activities' characteristics (pedological conditions, geography, traditional agricultural aspects etc.) favouring this sector, but also on the modest starting point (in 2001 there were only 72 organic certified operators in Romania - Agrobiznes, 2023) and the EU financial support received throughout the years, registered an important increase of the organic agricultural land, more than tripling the total area between 2010-2021 (Figure 1).



Source: own representation based on data provided by MADR, 2010-2021

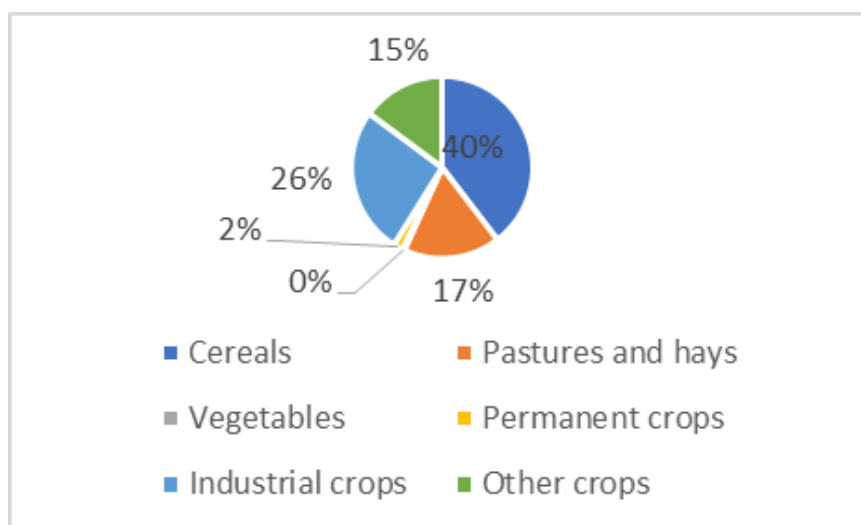
Figure 1. The evolution of the total organic agricultural area in Romania (ha)

The evolution of the organic agricultural area followed a trend marked by a significant turning point, easily noticeable especially in 2015-2016. This was caused by different factors, the most important ones being

related to the interval between the CAP' programming periods (Ursu and Petre, 2022) and to some sanctions applied to farmers that did not fully comply with the organic rules (Jurjescu et al., 2020), leading to the decrease

of the total organic agricultural area. After 2016, the total area followed a constant growth trend, at the end of the time interval 578,718 ha being cultivated based on organic

agriculture' principles. As regards the crops' structure, in 2010 this was dominated by cereals, with almost 40% of the total area (Figure 2).



Source: own representation based on data provided by MADR, 2010-2021

Figure 2. Organic crops' structure, 2010

Industrial crops had the second largest share in the total organic area, with 26.2%, followed by pastures and hays - 17.3% and other crops - 14.9%. The smallest share went to vegetables - only 0.4%, representing

734 ha of agricultural land. As compared to Europe' land use structure in organic agriculture, there are some evident differences (Table 2).

Table 2. Europe' land use structure in organic agriculture, 2010

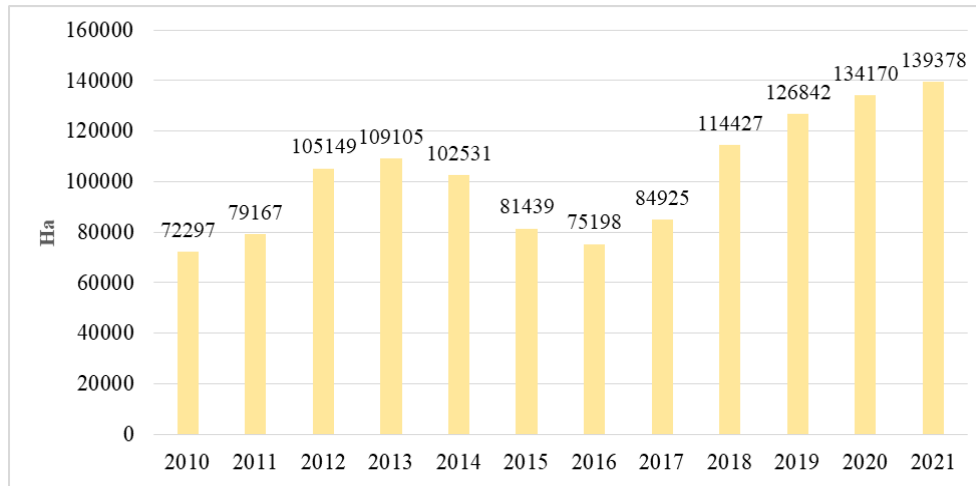
Europe	Area-ha	% in total area
Agricultural land and crops, no details, total	143,742	1.4
Arable crops, total	4,058,385	40.6
Permanent crops	983,783	9.8
Permanent grassland	4,499,872	45.0
Cropland, no details	39,341	0.4
Other agricultural land	276,964	2.8
<b>Total - out of which:</b>	<b>10,002,087</b>	<b>100</b>
Cereals	1,709,704	17.1
Vegetables	112,894	1.1

Source: own processing based on FiBL 2012, data for 2010

Although the total arable crops accounted for 40.6% of the total organic area, the cereals represented only 17.1%, a value significantly lower than that registered in Romania, of 40%. Also, the largest share in Europe in 2010 was held by permanent grassland, with 45.0%, followed by arable crops and, at a long distance, by permanent crops - 9.8%. The only similarity with the Romania' crop structure

was the low share of vegetables in the total organic area, reaching only 1.1%.

Coming back to national level, the largest share in the total organic agricultural area at the beginning of the interval was represented by cereals (over 72,000 ha, Figure 3) - mainly wheat and spelt, corn, barley, rice and other cereals.



Source: own representation based on data provided by MADR, 2010-2021

Figure 3. The evolution of the organic cereals area in Romania (ha)

During 2010-2021, the organic cereals area in Romania followed an ascending trend, somehow similar to that of the total area, with an evident increase in the first part of the interval (2010-2013), followed by a turning point starting from 2014 and continuing until 2016 (with a value just slightly higher than in 2010) and a second important growth period till 2021, when the organic area reached almost 140,000 ha. Same as in the case of other organic crops, an important factor for the increase of the cereals area is represented by the financial support for the organic sector (subsidies); other factors like increased demand for organic agri-food products but also economic ones could have supported farmers' decision to convert to organic agriculture. Today, almost 90% of the Romanian organic cereals production is exported to other EU member states (Agrobiznes, 2023).

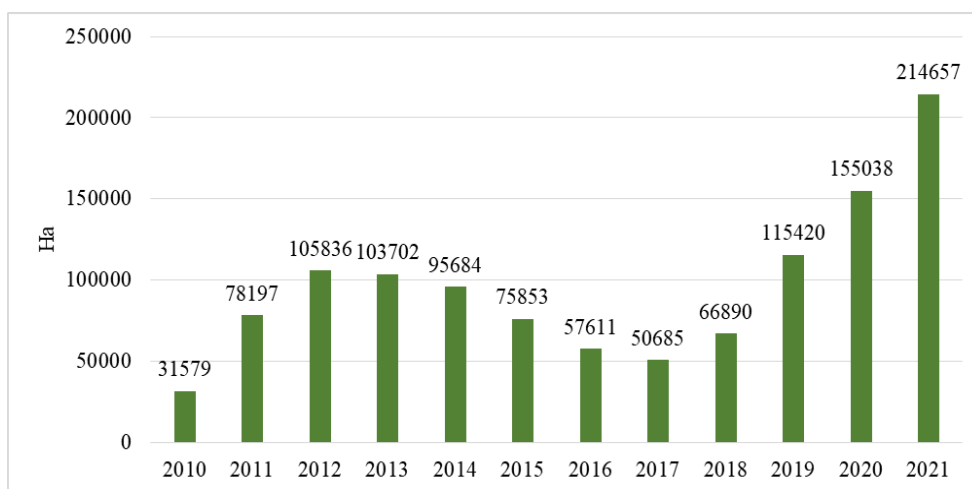
During the same time interval, at European level, the organic cereals area has increased by almost 73%, from 1,709,704 ha in 2010 to 2,947,005 ha in 2021. This translates into a share in total organic area of 16.5%, slightly lower than in 2010 (17.1%),

based on a higher growth rate of other organic crops.

Another important organic crop in the national structure is represented by pastures and hays, also referred to as permanent grassland at European level. The combination of different soils, geographical position, different altitudes and organic conditions support the importance of the permanent grassland in terms of organic stability and biodiversity' protection. They also represent an important element for preserving the traditional agricultural activities, especially dairy animal husbandry, and can be easily converted to organic agriculture.

At the beginning of the interval, the organic area (31,579 ha) represented the third largest share in the total area, with 17.3% (Figure 3). The following years marked an important increase of the permanent grassland area, until 2014, when the trend reversed significantly. This meant that in 2017 the organic area dropped down to 50,685 ha, the lowest level from 2011 on.

<sup>1</sup> Own processing of data based on FiBL 2012, 2023 – data for 2010 and 2021



Source: own representation based on data provided by MADR, 2010-2021

Figure 4. The evolution of the organic pastures and hays area in Romania (ha)

Nonetheless, starting from 2018 the permanent grassland area has been registering a significant comeback, recovering the previous loss and reaching, at the end of the interval 214,657 ha, representing 37.1% of the total organic area, the largest share in the crop structure for 2021. This evolution was strongly influenced by several factors, like the financial aid schemes based on CAP that support this type of crop, growing demand for organic dairy products, and also by the fact that traditional agricultural practices in this sector share many similarities with organic ones, making the conversion process much easier than in the case of other crops.

Looking at the European organic crop structure from the same interval, the permanent grassland was the dominant type of crop in 2021, with around 4.5 million ha, accounting for an impressive 45.0% of the total organic area (the largest share). Along the timeframe, this area extended to 6.9 million ha in 2021, representing 38.7% of the total area, the second largest share after arable crops (47.7%). Although permanent grassland gave up the first place in the crops' structure at European level, it is still one of the main drivers for the development of organic agriculture at this level, both in terms of potential and farmers' interest.

Another important category for organic consumers is represented by organic vegetables. Some products can reach an important market share, like fresh carrots - over 30% in Germany and around 60% in

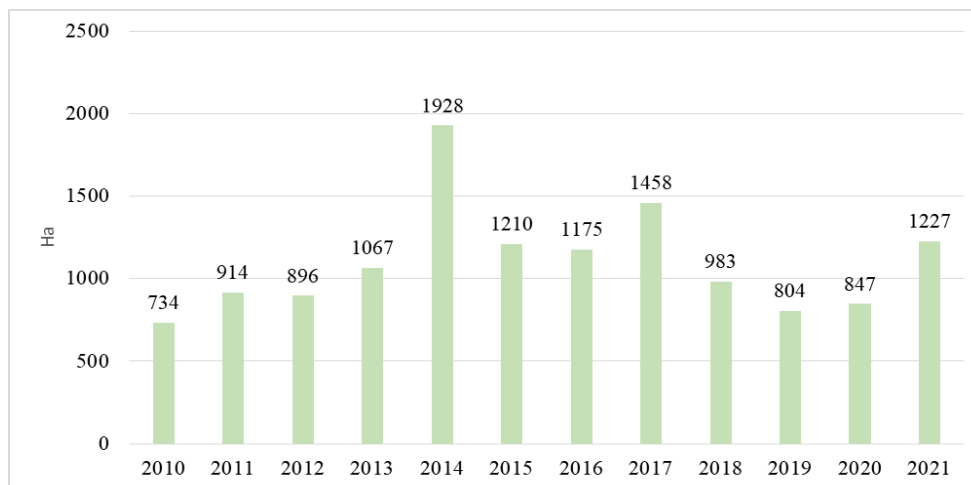
Denmark (FiBL, 2023). In Romania, in the last years, there has also been an increase in consumer' demand for organic vegetables, but the local production is still behind, thus the majority of products being imported from EU and non-EU countries. Still, there is a growing trend of establishing short supply chains, where citizens and nearby farmers partnership in this domain, known as community supported agriculture. Although this type of agriculture is evolving slowly, the trend is positive and expected to increase in the future.

Overall, during 2010-2021, the Romanian organic vegetables area registered a positive trend, from 734 ha in 2010, to 1,227 ha in 2021, translating into an increase of around 67% (Figure 5). However, the value for 2021 did not even come close to the highest value registered during this interval, in 2014, of 1,928 ha.

As for the share in the total organic area, vegetables accounted for 0.4% in 2010 and 0.2% in 2021, the smallest values among all types of organic crops.

In this context, the vegetables seem to have been the organic crop with the most irregular evolution. Except the common factors that influenced the organic crops during 2010-2021, others are specific to the vegetables crop - being more labour intensive, more vulnerable to climate factors, pests and diseases, more difficult to control the outcome in terms of production etc.

<sup>2</sup> Idem 1



Source: own representation based on data provided by MADR, 2010-2021

Figure 5. The evolution of the organic vegetables area in Romania (ha)

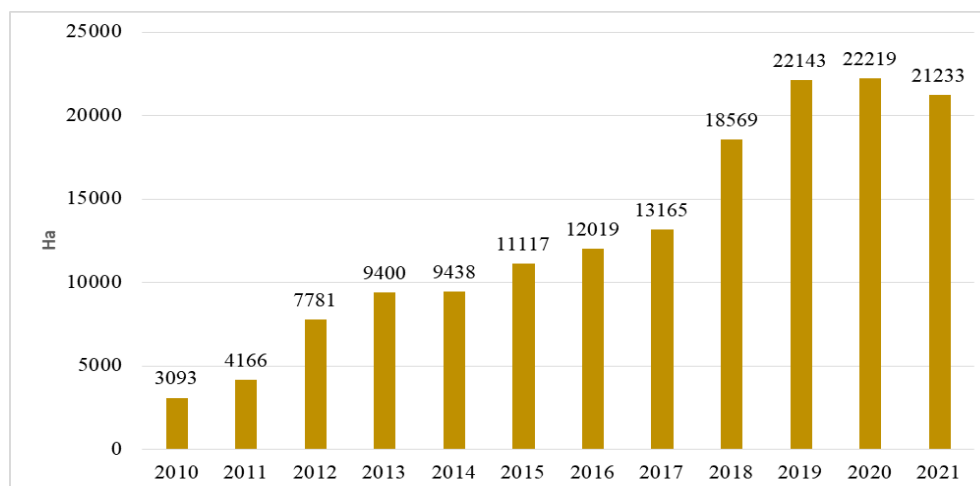
Looking at the European organic crop structure, the vegetables area followed an evident growth trend, from 112,984 ha in 2010 to 230,155 ha in 2021, representing an increase of more than 100%.

However, also at this level, the share in the total organic area is low, only 1.1% in 2010 and 1.3% in 2021. Still, the predictions for this sector are positive, with an expected and constant growth as organic vegetables remain very popular among European consumers.

Moving on, the next crop present in the Romanian organic structure are the permanent crops. These include fruit trees, fruit-bearing shrubs, grapes, nuts and others. During 2010-2021, the permanent crops area increased more than six times, from 3,093 ha in 2010, to 21,233 ha in 2021 (Figure 6). It has been one of the most constant growth evolutions of all organic crops in Romania.

One possible explanation for this is related to the specific biology of these crops - having a slower biological growth rate, needing a longer time to reach full productive capacity, but also having a long biological productive cycle, covering, in some cases, even decades. In other words, these crops represent a long-term commitment for farmers, where time represents an essential condition. Also, the fruits sector has been receiving, in the last years, an important support through European funds, that also reflects on the organic crops. For example, Romania is one of the most important organic walnuts producers from EU, that are being processed locally in different facilities set-up by integrators (Agrobiznes\*, 2023). Similar situations can be found also in the case of organic apples, berries and other fruits.

<sup>3</sup> Own processing of data based on FiBL 2012, 2023 – data for 2010 and 2021



Source: own representation based on data provided by MADR, 2010-2021

Figure 6. The evolution of the organic permanent crops area in Romania (ha)

As regards the share of the permanent crops in the total organic area, we are still talking about modest values: 1.7% in 2010 and 3.7% in 2021. Nevertheless, this sector is expected to expand in the future, being a priority for the Romanian authorities, but also based on consumers' demand for locally produced organic fruits. Taking into consideration the above factors, but also the natural capital and traditional experience in growing these crops, Romania has the chance to support the development of this sector, especially when it still heavily depends on imports from EU and non-EU countries as regards fruits, in general, and organic fruits, in particular.

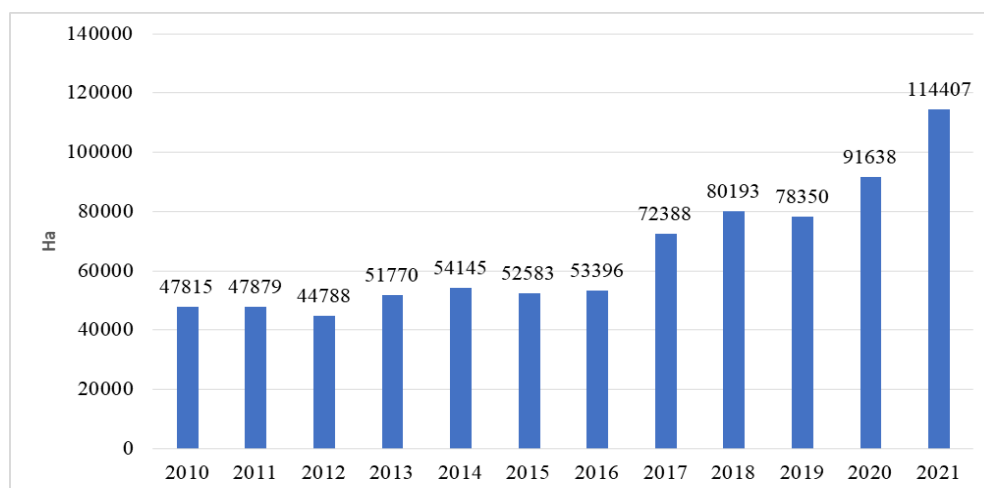
At European level, the permanent crops area more than doubled during this interval, from 983,783 ha in 2010 to 2 mil ha in 2021, representing the third largest share in the total organic agricultural area (around 10-11%). In 2021, the permanent crops' structure was dominated by olives (around 0.6 mil ha), followed by nuts, grapes, fruit-temperate, citrus fruit, berries and fruit-(sub)tropical.

Next crop in the present analysis are the organic industrial crops, including here soybeans, sunflower, rapeseed but also other oilseeds crops. It is one of the most important organic crops at national level, in terms of area and share in total organic area. During 2010-2021, the organic industrial crops area registered a significant growth trend, from 47,815 ha in 2010, to 114,407 ha in 2021, representing an increase of around 140%.

At the level of 2010, the industrial crops accounted for 26.2% of the total organic area, the second largest share after cereals, and in 2021 - almost 20%, representing the third largest share after pastures and hays and cereals.

These values also place Romania among the top European countries as regards the organic oilseeds crops: for example, in 2020, with an area of over 91,000 ha, Romania ranked 4<sup>th</sup> in Europe, after Russia, France and Ukraine (FiBL, data for 2020).

<sup>4</sup> Own processing of data based on FiBL 2012, 2023 – data for 2010 and 2021



Source: own representation based on data provided by MADR, 2010-2021

Figure 7. The evolution of the organic industrial crops area in Romania (ha)

Similar to organic cereals, around 90% of the Romanian organic oilseeds production is exported (in bulk) to other EU countries (Agrobiznes, 2023).

At European level, the organic oilseeds area registered a significant increase during this timeframe, from 188,248 ha in 2010, to 921,718 ha in 2021. This led, also, to the increase of the share in the total organic area,

from 1.9% to 5.1%. In fact, between 2020-2021, oilseeds had the highest increase of land area of all organic crops in Europe (FiBL, 2023).

At the end of 2021, Europe had the largest organic oilseeds area in the world, Romania being on the 7<sup>th</sup> place in this global hierarchy, after China, Russia, Ukraine, India, France and Togo (FiBL, 2023).

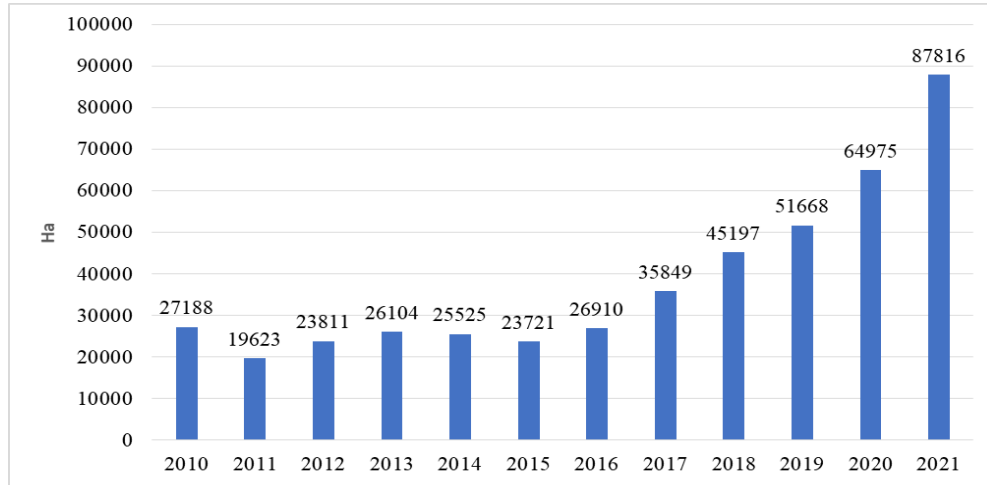


Last, but not least in Romania’s organic crops structure are “other crops” - representing crops that cannot be included in other categories.

During 2010-2021, “other crops” area followed an ascending trajectory, from 27,188 ha in 2010, to 87,816 ha in 2021, representing an increase of more than 3

times of the land area (Figure 8). These values accounted for an important share of the total Romania’s organic area, around 15% for both 2010 and 2021.

<sup>5</sup> Own processing of data based on FiBL 2012, 2023 – data for 2010 and 2021

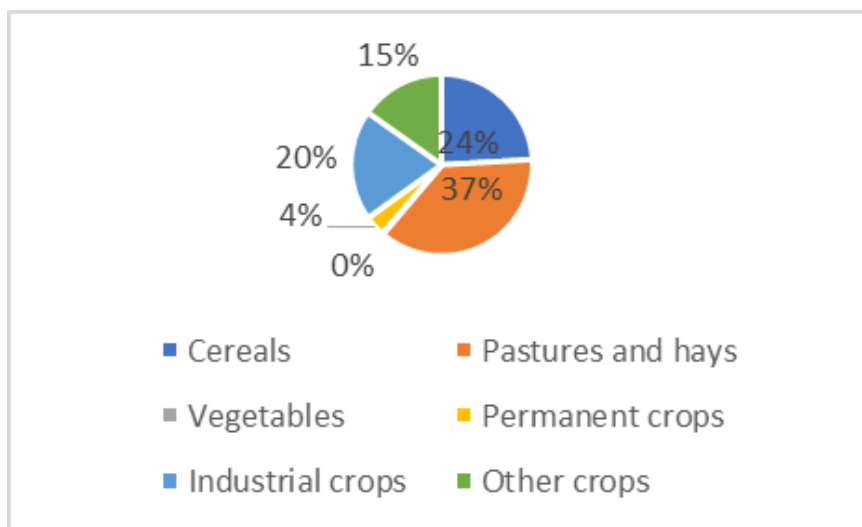


Source: own representation based on data provided by MADR, 2010-2021

Figure 8. The evolution of the “other crops” area in Romania (ha)

If in the first half of the interval the “other crops” followed an oscillating trajectory, marked by several fluctuations, starting from 2016 the land area registered a constant growth till the end, with a significant leap between 2020-2021, of more than 22,000 ha.

In this context, based on the individual evolutions of the organic crops during 2010-2021, at the end of the timeframe, the crops’ structure displayed some evident differences as compared to 2010 (Figure 9).



Source: own representation based on data provided by MADR, 2010-2021

Figure 9. Organic crops’ structure, 2021

The new structure is clearly dominated by the permanent grassland (pastures and hays),

this being the most dynamic crop during 2010-2021, in terms of land area and share in

total area. The organic cereals, that had the largest share in 2010 (40%) are now on the second place, with 24%, although the corresponding land area almost doubled. The same as in 2010, the third place is taken by industrial crops, but now with 20% (less than in 2010), followed by “other crops” with a constant 15%. The lowest share in the total organic area is represented, again, by vegetables, with a very low value, of only 0.2%.

## CONCLUSIONS

The organic/ecological agriculture has been developing constantly during 2010-2021, both at European and global level, driven by diverse factors like increased demand for cleaner agri-food products, financial support mechanisms and growing concerns about the impact of conventional agriculture of the environment. At European level, this led to the increase of the total organic land area with more than 77%, while the share in the global area reduced from 27% to 23%, based on a higher growth rate of other regions.

At national level, with an important development potential in this field, Romania seems to have found a way to overcome the turning point represented by the 2014-2016 period, regaining the growth trend and reaching, in 2021, a total organic area of 578,718 ha, more than three times higher than in 2010. In fact, during 2021, Romania had the third largest contribution to the development of the European organic area, after France and Spain, with an increase of more than 109,000 ha, mainly based on the permanent grassland that turned out to be the most dynamic organic crop during this timeframe. An important development has been registered also by cereals, industrial crops and “other crops”, each with more than 60,000 ha increase of the land area - representing, in this order, the largest shares of the total organic area in 2021. Beside the evident positive evolution of the organic area, are there any aspects that can be improved in Romania? Yes, and we can think, firstly, about adding value to these products by locally processing them, as now almost 90%

of the production of organic cereals and oilseeds is sold, in bulk, to other EU countries. This, in turn, would contribute to the sustainable development of the organic agriculture in Romania, a better integration in the value chains and to strengthening the relation between producers and consumers.

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