TRENDS FOR SUSTAINABLE AGRIBUSINESS AND AGROFOOD CONSUMPTION IN ROMANIA

Ioana Panait[1] and Marian Cătălin Cucu[2]
[1) 2)] *The Bucharest University of Economic Studies, Romania*
E-mail: panaitioana48@gmail.com; E-mail: cmc.catalin02@gmail.com

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Abstract
The paper presents the trends from agriculture sector regarding food consumption and agribusiness, all the trends are linked to the sustainability of food and agriculture, the focus being on environment protection. The importance of the paper is reflected by the role of the agrofood sector in the development of the national economy, especially in the rural economy, where agriculture is the main economic activity and of the food, which is an important component in the life of the population, the consumption food trends influencing the lifestyle of the people. The objectives of the article include the presentation and description of current trends in agribusiness and food consumption for creating an image on the Romanian agrofood sector and analyzing the data of four specific food balance sheet indicators, for the main food categories of the last 4 years. Through the quantitative analysis, the paper highlights the trends in Romania compared to the European Union in terms of food consumption in order to determinate the consumption trends and production obtained, the imports made, and the food losses registered to determine trends in agribusiness. In the last period there is a slight increase in the quantities of food consumed by an inhabitant, a value directly proportional to that of the quantities of food waste, which raises question marks in the context of the population growth of the planet.

Keywords
Sustainable agriculture, environmental concerns, ethical consumption, agricultural economics

JEL Classification
Q01, Q13, Q17

Introduction

The expansion of food production and economic growth often have major negative effects on the natural environment, but can agriculture be transformed to provide enough output to cover domestic consumption, but also income opportunities for an economic viability to ensure sustainable development of agriculture sector? The purpose of the article is to highlight the

characteristics related to sustainability in Romanian agribusiness and consumer inclinations when purchasing and consuming agrofood products, describing the main ways to achieve sustainable development of the agriculture sector. The need to adapt to the new trends through a continuous development of the agrofood supply chain activities is essential for the agricultural sector to maintain in the best conditions and to improve in order to continue to offer products in line with consumption trends. The article aims to present an analysis of the trend of food consumption and business regarding the production and imports with agrofood products in Romania and the European Union (EU), as well as the influence of the main factors impacting this trend.

Food and Agriculture Organization (FAO) describes a trend that is part of the future of agriculture and food, "Changing food systems" and makes specifics about the current situation facing the agricultural sector and the changes that can improve the agricultural system. (FAO, 2017).

There are 3 situations that FAO mentioned which significantly impacts on agriculture and trends that farmers and consumers must focus on to contribute to the sustainable development of agriculture.

1. The present situation is "As the pressure on scarce land and water resources increases, the agrofood sector must find ways to reduce its environmental impact" (FAO, 2017) and the trends go to precision agriculture.
2. The present situation is "longer agrofood supply chains may be associated with higher greenhouse gas emissions" (FAO, 2017) and trends go to “from farm to plate” supply, slow food movement and local agrofood products.
3. The present situation is "the production of fertilizer, herbicide and pesticide, along with emissions from fossil fuels used in the field, represents about 2 percent of total greenhouse gas emissions" (FAO, 2017) and trends go to organic farming and zero residues products.

The aspects to be treated further in the article are the impact of sustainable consumer preferences on the current supply of agrofood products, starting from increasing consumption of organic products and purchasing local products through new supply-chain channels, and studying the differentiating elements through which agribusinesses can gain a competitive advantages and at the same time support the sustainable development of agriculture.

1. Actual trends in agriculture sector

The participants in the agrofood supply chain, from producer to distributor and final consumer are now more aware and more sensitive to global issues, especially regarding the natural environment, safety, and sustainability of the agriculture sector. Each actor tries to minimize the negative impact of the activities carried out on the environment and wants to work to contribute to the sustainability of the agricultural sector and for this to happen, it must adapt to new trends.

1.1 Trends in agribusiness

The present directions that contribute to a sustainable food system and which is emphasized more and more because they are friendly with the environment are in figure number 1.

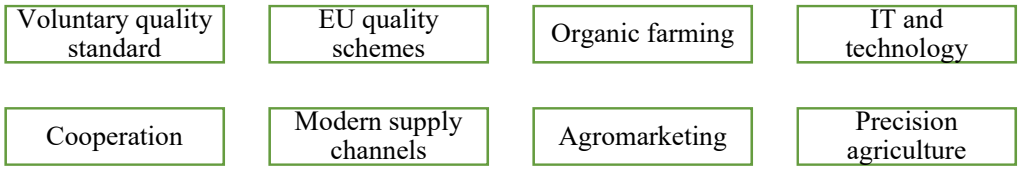

Fig. no. 1 Trends in agribusiness
Source: Authors research

Sustainable agriculture especially through **organic farming** is under development in Romania represented in 2018 only 2.4 % from the total agricultural area while the EU average is 7.5% (EUROSTAT, 2020) with 9,008 organic operators according Ministry of Agriculture and Rural Development from Romania (MARD, 2020) and the share market being representative in retail where imports are necessary to ensure demand that is growing.

One modern supply chain which is beginning to gain consumer confidence is the online shop, despite the high perishability of fresh produce customers are beginning to trust this mode of distribution. From farm to plate is a concept which encourage the short agrofood chains, directly from farmers to consumer especially since there is a direct connection with the farmer and thus the veracity of the product is ensured. In Romania, the main distribution channels are retail, which is a modern channel that covers the whole country, but the traditional free market is still maintained.

Cooperation in agriculture sector through development of agricultural producer organizations, inclusion in cooperatives, transmission of know-how through a partnership between farmers and agribusiness partners, creation of local action groups based on public-private strategic partnerships are necessary for effective integration into value chains of supply having the possibility of development at national level, ensuring a promotion of inclusive and sustainable economic growth, employment, finally ensuring a sustainable development of sector. Even if the trend at European Union (EU) level is cooperation between farmers and financial support is provided through the national rural development program, in Romania this action is still at the beginning. The big number of farms from Romania are explicated due to small dimension of it, is a tradition to maintain the family farm because this is an inheritance and for this reason the small farmers do not want to give up the land or to associate, they want to own and manage it for themselves. There is still the mentality of having only their own forms and only and to manage it themself, the degree of association and cooperation are low in Romanian agriculture, with only 23 producer groups in fresh fruits and vegetables sector and 128 groups of producers in fields such as meat, eggs, milk, honey and cereals. (MARD, 2020)

Precision agriculture is based on a new agricultural system, a development based on increasing the yields of production under conditions of efficiency of inputs and natural resources with permanent and detailed control of the necessary conditions of cultivation and innovation based on IT technologies for the continuous monitoring of all indices and their permanent control by accessing information from portable mobile devices. The precision agriculture aims to a sustainable production which built resilience to climate change. In Romania, precision agriculture is mainly carried out through hydroponic greenhouses that offer controlled conditions for the growth of the vegetable culture, being monitored and ensured optimal conditions for all the stages which will bring to producers a higher yield of the production compared to the open field vegetable production.

In the context of demand diversification to consumers for sustainable products, as well as from the increased interest in locally produced foods, **agromarketing** represented by regional branding can contribute to the creation of an identity of the products that attract the consumers and to represent a competitive advantage on the market. In Romania, the most famous brands are those that have a history behind, being founded for decades.

The traceability through blockchain technology allows the recording of all the steps performed within the agrofood supply chain, highlighting the origin of the food products, allowing the consumer to know all the activities that were the basis of the product and creating a transparent agri-food market. Through the QR code from label, the producer brings added value to the product and the consumer having access to different real information about the consumed product will have more confidence in it.

To provide a guarantee that the food safety of agricultural products is ensured, the farmers can obtain a **voluntary quality standard** that certifies their production and strengthens their

credibility with consumers. Through these certifications, which are now common in the market of agri-food products, it is claimed that the production is obtained under favorable conditions, respecting the environment, providing all the necessary conditions for the employees according to the social audit and respecting the welfare of animals. (FAO, 2020)
The **EU through quality schemes** aims to add added value to products with unique features, in present there are 4 certifications for these products. In Romania there are only 7 food products with EU quality labels these being registered between 2011-2019 when more information was available on these certifications after Romania's accession to the EU in 2007 and when the potential of these products was realized for the local economy being generative of the added value for the producer, but also for the society, while countries such as Spain, France, Italy, Greece, United Kingdom, Luxembourg, Portugal, Belgium, Holland, Denmark, Germany, Austria have registered their first products since 1996. (EU, 2020) MARD certifies the agrofood products through two national certifications, Romanian traditional products, and Romanian consecrated recipes, with 33 recipes which includes a range of meat, bakery, milk products and processed fruit and vegetables.
The agrofood value chain need to be more interconnected and during all the stages it is necessary to take into account the sustainability and the reduction of some elements that currently negatively influence the development of the Romanian agricultural sector: food waste, carbon dioxide emissions. The development of the agricultural sector can be achieved through research, development and knowledge transfer that will develop innovations to address the threats to the profitability and competitiveness of the agricultural sector leading to efficient agrofood supply chains and sustainable agricultural practices.

1.2 Trends in food consumption

Food consumption patterns reflect complex social behaviors that can characterize a society and different models at country level are due to the differences between the individual purchasing power, food preferences, cultural aspects, access to food and all this tend to improve with the level of economic development.
Consumers have become increasingly distant from the physical and social origin of food because of industrialized food systems that support quantity over taste, quality, sustainability, and environmental protection so consumers try new trends and look for new alternatives that combine the main characteristics of an authentic and sustainable agrofood supply chain (Blay-Palmer, 2008).
In most countries the consumption of processed foods has increased more than the consumption of fresh foods, according to Global Dietary Database the middle-income countries show the biggest change to the consumption of processed foods and in urban areas there are preferred foods that ready to cook and eat.
In figure number 2 there are presented the main trends in food consumption being characterized below.

Fig. no. 2 Trends in food consumption
Source: Authors research

The rise of **ethical consumerism** has increased consumer support for products from sustainable production systems, ethical consumers have a concern that it includes not only the well-being of own and that of society, but also of the environment. Reconnecting the food chain and switching to sustainable foods it is a long-term path to progress and constant improvement must be strength driving sustainable agriculture.

Slow food is a global trend that wants to prevent the disappearance of local food that is based on tradition and aims to rediscover the food which is good and clean, but also to know and value the producer, creating a deep connection between producer-culture-traditions-product-consumer. (Slow Food International, 2020) There are several restaurants in Romania that are based only on this trend and that gather people not only for food, but also for conversations and events related to this concept.

Local food production with specifically agrofood products from a region linked to tradition is important especially because the consumption supports the community from a socio-economic point of view. Also, the consumption of local products to the detriment of the imported ones helps the environment because the carbon dioxide emissions emitted by a local product following the transport are lower compared to an imported product from a long distance.

Currently, consumers of **organic agrofood products** in Romania want products that meet their needs and expectations, with a strong emphasis on quality and safety, at a not very high price. Most importantly, consumers' awareness of the benefits and high demand of consumers, especially in developing countries such as Romania, are the most essential for the development of organic farming and the tendency so far has been that the demand will increase exceed the availability of national production which are certified as organic farming. Food consumption trends that influence consumers' choices and preferences are based on consumer education and concerns towards social issues, especially those that support the local rural economy and towards environmental issues for the purpose of greening agriculture.

2. Quantitative analysis on food trends

For this quantitative analysis were centralized the main data regarding the food consumption of the main 7 categories of foods that indicate the consumption trends of the population in Romania and in the EU in the period 2014-2017.

In table no. 1 are presented the main sources of supply for the 3 categories of foods analyzed through which it can be highlighted the national production trends, the international trade for these products, but also the preferences about food consumption.

Table 1. Food Balance Sheet for cereal and fruits and vegetables products. Romania vs EU average

Category	Year	Food supply quantity kg/capita/yr		Domestic supply quantity 1000 to		Import quantity 1000 to		Losses quantity 1000 to	
		EU	RO	EU	RO	EU	RO	EU	RO
Cereals - Excluding Beer	2014	127.9	158.0	291,952	13,577	96,688	1,812	6,762	104
	2015	128.2	163	281,359	12,349	98,607	2,493	6,248	88
	2016	128	165	280,574	13,807	102,880	3,824	6,431	90
	2017	127.5	168.5	285,960	13,313	110,825	2,926	6,540	104
Fruits - Excluding Wine	2014	82.3	82.81	71,516	2,639	45,196	644	3,764	61
	2015	88.2	84.55	75,594	2,653	46,184	791	3,817	59
	2016	86.1	90	73,940	2,707	45,903	943	3,821	61
	2017	84.2	88.25	69,931	2,839	47,921	965	3,835	69
Vegetables	2014	106.4	190.78	63,194	4,195	25,998	450	6,911	191
	2015	105.3	188.56	62,892	4,121	26,905	514	7,147	197
	2016	110.7	178.93	65,414	3,876	27,717	597	7,119	182
	2017	111.3	196.22	65,550	4,227	28,306	605	7,152	203

Source: FAO STAT,2020

The consumption of vegetables registered in the EU an increase of 4.67 percentage points in 2017 compared to 2014. In Romania, the consumption of vegetables decreased during 2014-2016, in 2017 increasing by 5.44 kg/capita/ year compared to the year 2014 and with 17.29 kg/capita/year compared to 2016. The main factor influencing this trend is the domestic production, an indicator that is directly proportional to the consumption of vegetables per capita/year. At EU level, in 2017, vegetable production increased by 3.73 percentage points, compared to 2014, while in Romania the growth was only 0.76 percentage points. The import of vegetables is an indicator that is constantly rising, both in Romania and at European Union level, in Romania it registered an increase of 34.44 percentage points, in 2017 compared to 2014, while at EU level of 8.88 percentage points. With the increase of the consumption of vegetables the losses related to this category also increased, in 2017 compared to 2014 in Romania the losses increased by 12,000 tons, while at the level of the European Union the losses increased by 241,000 tons.

Carrying out an analysis on fruit consumption, between 2014-2017, we can see a slight increase in the quantity consumed per inhabitant, if in 2014, at EU level, 82.38 kg/inhabitant were consumed and in Romania 82.81 kg / inhabitant, in 2017 The EU registered an increase of 2.23%, and Romania 6.57%. This detachment of Romania from the EU is also because the domestic fruit production in Romania registered an increase of 7.58%, while at EU level it decreased by 2.22%. Besides the growing domestic fruit production, there is also a significant increase in imports, in Romania, during 2014-2017 fruit imports increased annually, reaching in 2017 a value of 49.84% higher compared to the year 2014. With the increase of domestic production and imports, the losses on the fruit segment registered significant increases in Romania, if in 2017 there were 69,000 tons of fruit loss, in 2014 the value of this indicator was 13.11% lower.

Analyzing the consumption of cereals, in the period 2014-2017 Romania registers values higher than the European Union average, registering a constant increase of this indicator, while the EU average registers a small decrease of 0.34% in the year 2017 compared to 2014. Both in Romania and in the EU domestic production of cereals registered lower values in 2017 compared to the base year, Romania registered a decrease of 1.94% while the EU recorded a decrease of domestic production by 2.05%. Regarding the import of products that belong to this segment, reporting 2017 to 2014 there is an increase of 14.62% at EU level and an increase of 61.48% in Romania.

Table no. 2 presents the 4 indicators studied for the 4 categories of animal products. Regarding dairy products, if at EU level there was an increase of 0.78%, in Romania the consumption fluctuated, in 2017 decreasing by 1.79% compared to 2014. Although in Romania, in 2017 it was consumed a smaller quantity of dairy products compared to 2014, during the four years analyzed, the consumption in Romania was above the European Union average. While at EU level the domestic production of dairy products increased every year reaching in 2017 an increase of 1.96% compared to 2014, in Romania the domestic production of dairy products is decreasing, decreasing by 4.9% in 2017 reported at the base year. As compared to the base year 2014, in 2017 imports increased by 12.22% at EU level and by 53.67% in Romania. With the decrease of domestic production and the increase of imports of dairy products in Romania, the share of losses decreased significantly, by 10.71% in 2017 compared to 2014.

Meat consumption per inhabitant in Romania has registered values below the EU average. However, reporting 2017 to 2014, Romania had an increase of 6.36 percentage points, while the EU average of 2.55 percentage points. However, the growth coefficient in Romania of meat production is approximately equal to that of the European Union, reporting 2017 to 2014, Romania increasing 3.94% and EU 3.89%. Regarding the import of meat in Romania, it is in a continuous increase, if in 2014 Romania imported 377,000 tons of meat, in 2017 it registered an increase of 33.69%. Analyzing the losses, at EU level, in 2014-2017 Romania

registered a constant growth, reaching in 2017 to register a value with 16.23% higher compared to 2014.

Table 2. Food Balance Sheet for animal products. Romania vs EU average

Category	Year	Food supply quantity kg/capita/yr		Domestic supply quantity 1000 to		Import quantity 1000 to		Losses quantity 1000 to	
		EU	RO	EU	RO	EU	RO	EU	RO
Eggs	2014	11.09	14.33	6,819	337	1,415	16	132	16
	2015	11.06	14.10	6,876	329	1,411	20	133	16
	2016	11.31	13.59	7,006	320	1,423	21	135	15
	2017	11.45	14.35	6,956	327	1,533	20	138	16
Fish, Seafood	2014	23.06	5.85	13,458	133	18,623	124		
	2015	23.01	5.88	13,360	133	18,232	124		
	2016	23.14	5.92	13,546	133	18,425	124		
	2017	23.11	5.96	13,592	133	18,300	124		
Meat	2014	80.52	60.09	41,204	1,217	15,721	377	345	12
	2015	81.51	63.49	41,756	1,278	16,101	439	368	13
	2016	82	65.86	42,508	1,316	16,383	464	394	14
	2017	82.57	63.91	42,807	1,265	17,088	504	401	12
Milk - Excluding Butter	2014	234.71	243.28	143,509	5,126	52,172	518	873	28
	2015	234.79	244.62	143,564	5,061	54,786	549	896	27
	2016	235.51	247.09	144,339	5,083	56,556	679	900	27
	2017	236.55	238.92	146,322	4,875	58,546	796	910	25

Source: FAO STAT, 2020

Following the analysis of the consumption of fish and seafood both at the level of Romania and at EU level, insignificant increases are found, in 2017 compared to 2014, Romania registered an increase of only 1.88% while the EU of 0.22%. As a result of the quantities consumed by fish and seafood unchanged both in the European Union and in Romania the domestic production and the import of the products of this category have registered insignificant changes.

Reporting the consumption of eggs from 2017 to the value registered in 2014, we find an increase at EU level of 3.25% while in Romania of only 0.14%. Regarding the domestic production, although in the EU there is a slight increase of 2.01%, in Romania there is a decrease of the production with 2.97%. Due to the low growth rate of domestic production at the European Union level, as well as the decrease of the Romanian production, imports gained ground registering significant increases of 8.34% in the EU and 25% in Romania.

Referring to the domestic production of the main categories of food products, there is a slight increase among fruits, vegetables and meat, which can indicate the development of Romanian agribusiness in these areas, both by increasing the surface area, livestock and by increasing yields.

Regarding the situation of imports, there is a significant increase among the main categories of food, which reflects an upward trend of the development of import-based businesses (distribution) and at the same time it reflects the huge potential of the production and processing based businesses in Romania, due to the demand not covered by the current domestic production.

Conclusions

The current trends in agribusiness offer farmers the opportunity to have a competitive advantage in the market through products that offer added value to the supply chain and the food consumption trends presented indicate a demand for products that not only satisfy the need for food but also support local producers and have a minimal impact on the environment. Regarding the consumption of food products of the main categories, in Romania, there has been a steady increase only among cereals and products derived from cereals (in Romania consumes in 2017 with 40.97 kg / inhabitant more than the EU average) and fish (Romania, although it has an exit to the sea and is crossed by one of the largest rivers in Europe, has a consumption of over 25.79% lower compared to the EU average, in 2017). Among the products derived from fruits, meat and milk, Romania registered constant increases in the period 2014 - 2016, in 2017 the quantities consumed on average by one inhabitant decreased, however the quantity consumed related to these categories of products during the analysis period had values higher than the EU average.

The limitations of the research consist in the impossibility of determining the efficiency of the implementation of the current trends analyzed from the point of view of sustainability, following in future research to demonstrate the correlation between identified trends and their long term impact considering the socio-economic and environmental aspects. The role of agriculture is strengthened, with a focus on the need for future growth of agricultural production in line with food safety and security issues, which must be in line with long-term needs in terms of sustainable development on the three pillars, socio-economic and environmental with benefits on the whole society while protecting the planet.

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