IBIMA Publishing
Communications of International Proceedings
https://ibimapublishing.com/p-articles/38AGRI/2021/3847021/
Vol. 2021 (35), Article ID 3847021

# Food Security In Romania

Andreea D. GIUCA
University of Economic Studies, Bucharest, Romania
andreeagiuca@yahoo.com

Claudiu F. LACEANU
School of Advanced Studies of the Romanian Academy (SCOSAAR),
Romanian Academy, Bucharest, Romania

Correspondence should be addressed to: Andreea D. GIUCA; andreeagiuca@yahoo.com

* Presented at the 38th IBIMA International Conference, 23-24 November 2021, Seville, Spain



## Abstract

The aim of the research is to analyze the current situation and future prospects for sustainable food security in Romania, given several EU concerns about food security became more frequent during the debates on the future of the Common Agricultural Policy in 2014-2020 and have were used as an argument in favor of maintaining the CAP as a strong and integrated policy. In this respect, it has been established that food security for the population must be the most important objective of the CAP.

The main research methods used in the study were the use of national and international statistics on the production and consumption of agri-food products, these data were analyzed using statistical indicators such as: standard deviation, coefficient of variation and annual growth rate. The study identified that the issue of food security has become paramount, due to increasing demand for food. At present, the countries of the European Union do not face major problems in terms of food security, in terms of food availability and supply, but the income gaps and the poor development of some countries, which lead to a decline in food security. certain sections of the population can raise problems in terms of population access to food and can affect food security in some poorer EU Member States, such as Romania where vulnerability to food insecurity is due to the differential between living conditions. urban and rural environment.

**Keywords**: food security, agricultural production, consumption, climate change, food waste

## Introduction:

The concept of food security is defined as "access for all and permanently to the food necessary for an active and healthy life". At the individual level, food security is considered to be the right of every human being to eat, which is the first in the human rights system, launched by the FAO in 1963 in Rome, through the famous manifesto entitled "Proclamation of the right of every human being to eat and quench hunger". In 2018, FAO defines the concept of food security as follows: "Food security exists when all people, at all times, with physical and economic access to sufficient, safe and nutritious food to meet their food needs and food preferences for an active life and healthy". This definition consists of four key dimensions: availability (sufficient quantities of food), access (adequate resources to obtain food), use (nutritious and safe diets and clean water) and stability (the temporal aspect of the other three dimensions). (Campeanu, 2019)

In a research study conducted by Matei-Gherman et al. (2018) shows that poverty reduction and maintaining food security are mainly based on increasing agricultural production, only that achieving this goal is closely related to increasing agricultural areas that are limited, which makes the goal not easy to achieve.

**Cite this Article as:** Andreea D. GIUCA and Claudiu F. LACEANU, Vol. 2021 (35) "Food Security In Romania" Communications of International Proceedings, Vol. 2021 (35), ISBN: 978-0-9998551-7-1, ISSN: 2767-9640. Article ID 3847021.

The food security of a country can be ensured exclusively by the production and manufacture of food in a quantity that ensures the needs of the population both quantitatively and nutritionally for all categories of the population. The minimum food recommended by the FAO is 2,000 kcal/person/day for women and 2,500 kcal/person/day for men, but these minimum intakes differ quite a bit depending on the geographical area, type of activity and age. consumers. (Burbulea and Malancea, 2008), (Nica and Petre 2018)

Although agriculture is only one of the factors influencing food and nutrition security, the links between these results and the performance of agricultural systems can be of vital importance. The links between agriculture and food security are crucial for many farms in low- and middle-income countries, especially for those facing soil degradation, declining water availability and increasing climate change. (FAO, 2018), (Nicholson et al., 2021)

## Materials and Methods

The paper studies the issue of food security. The objectives of the paper aim to provide an overview of food security in Romania and its future prospects. To this end, an analysis of the state of food security research was carried out, using the enformation and google academic platforms, statistical data were processed and interpreted using the data series provided by FAO, the National Institute of Statistics and the European Commission and statistical indicators such as:

- the average of the period: m = $\frac{x_1+x_2+\cdots+x_n}{n}$
- standard deviation: $\sigma = \sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$, where:

$x$ = sample mean;
n = sample size.

- coefficient of variation (v = $\frac{\sigma}{x}$100), where:

$\sigma$ = average deviation;
$x$ = the average level of a variable.

- growth rate ($\bar{R} = (\bar{I}\ x\ 100) - 100$), where:

$\bar{I}$ = the general average growth index.

These indicators were analyzed to highlight the evolutionary trends of agricultural production per capita and average annual consumption per capita for the main food products in Romania. In order to notice the differences registered at the level of the analyzed years, the comparison method was used. The research methods used in conducting the study were the following: systematic and comparative analysis and complex approach to the topic by studying previous research conducted by various authors. For a clearer picture of the results, the graphical representation of the analyzed events and phenomena was also used. The statistical research process cost the following stages: data collection and recording, data processing, analysis and interpretation of results. (Ceapoiu, 1968)

## Results and Discussions

Food security is increasingly invoked as a critical motivating factor in agricultural systems research, as a trend in a broader movement towards nutrition-sensitive agriculture (FAO, 2013).

The most representative indicator of food security is the production of food per capita. This initiator reflects the availability of food nationwide. Any deviation in food availability caused by insufficient agricultural production or the use of raw materials for purposes other than food production, as well as rising prices, can lead to imbalances with negative effects on food security, especially in underdeveloped countries. (Nicholson et al., 2021) (Pawlak K. and Kołodziejczak M., 2020)

**Table 1 - The evolution of the production of the main agricultural products per inhabitant in Romania in the period 2015-2019 (kg/person)**

| Nr. crt. | Name of agricultural product | Unit | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|
| 1. | Grain cereals | kg./person | 975.4 | 1,104.5 | 1,385.1 | 1,620.1 | 1,570 |
| 2. | Wheat | kg./person | 401.7 | 427.8 | 512.2 | 520.8 | 531.6 |
| 3. | Rye | kg./person | 1.2 | 1.3 | 1.4 | 1.5 | 1.4 |
| 4. | Maize | kg./person | 455.2 | 545.3 | 731.2 | 958.3 | 899.9 |
| 5. | Sunflower | kg./person | 90.1 | 103.1 | 148.7 | 157.2 | 184.3 |
| 6. | Sugar beet | kg./person | 52.5 | 51.4 | 59.9 | 50.2 | 47.3 |
| 7. | Potatoes | kg./person | 136.2 | 136.5 | 159.1 | 155.2 | 135.6 |
| 8. | Vegetables | kg./person | 185.3 | 170.4 | 185.7 | 195 | 182.2 |
| 9. | Fruits | kg./person | 61.8 | 63 | 54 | 93.1 | 76.8 |
| 10. | Meat | kg./person | 72.2 | 74.3 | 74.6 | 76.2 | 77.2 |
| 11. | Milk | liters / person | 248 | 244.3 | 238 | 240 | 238.3 |
| 12. | Eggs | pieces / person | 331 | 314 | 306 | 293 | 287 |

*Source: National Institute of Statistics, www.insse.ro, accessed on 16.09.2021*

In Romania, in the period 2015-2019, the production of the main agricultural products per capita showed an upward trend, with small fluctuations. At the level of 2019, the highest production per capita was recorded for grain cereals (1,570 kg/person), which are the raw material in food production. Among the cereals obtained, grain corn represented the most significant production (899.9 kg/person in 2019), and the lowest rye (1.4 kg/person in 2019). Regarding vegetables, in the analyzed period there was a slight decrease in production from 185.3 kg/person in 2015 to 182.2 kg/person in 2019, highlighting a reduction in production by about 2%. In the case of fruits, production registered an upward trend, achieving an increase of 24.3% in 2019 (76.8 kg/person) compared to 2015 (61.8 kg/person). (Table1)

Analyzing the zootechnical production, it was noticed that the meat production had an upward growth trend, while the milk and egg production showed a downward growth trend. During the analyzed period, meat production increased by approximately 7%, from 72.2 kg / inhabitant in 2015 to 77.2 kg / inhabitant in 2019, the production per capita recorded for milk and eggs decreased, noting a decrease of 4% and 13.3%, respectively. (Table1)

Analyzing the production per capita of the main agricultural products, it was found that currently, Romania's food security is not in danger, being influenced only occasionally by certain factors that can have a negative impact on it, for example: extreme weather events such as drought . In the future, a greater influence of these factors on production is expected, given the effects of globalization and global warming. (Istudor et al., 2019)

**Table 2 - Statistical indicators calculated for the production of the main agricultural products per capita in Romania at the level of the period 2015-2019**

| Nr. crt. | Name of agricultural product | Unit | MINIMUM | MAXIMUM | AVERAGE | STANDARD DEVIATION | COEFFICIENT OF VARIATION (%) | ANNUAL RATE OF GROWTH (%) |
|---|---|---|---|---|---|---|---|---|
| 1. | Grain cereals | kg./person | 975.4 | 1620.1 | 1331.02 | 283.45 | 21.3 | 12.64 |
| 2. | Wheat | kg./person | 401.7 | 531.6 | 478.82 | 59.61 | 12.45 | 7.26 |
| 3. | Rye | kg./person | 1.2 | 1.5 | 1.36 | 0.11 | 8.38 | 3.93 |
| 4. | Maize | kg./person | 455.2 | 958.3 | 717.98 | 217.88 | 30.35 | 18.58 |
| 5. | Sunflower | kg./person | 90.1 | 184.3 | 136.68 | 39.15 | 28.64 | 19.59 |
| 6. | Sugar beet | kg./person | 47.3 | 59.9 | 52.26 | 4.69 | 8.98 | -2.57 |
| 7. | Potatoes | kg./person | 135.6 | 159.1 | 144.52 | 11.62 | 8.04 | -0.11 |
| 8. | Vegetables | kg./person | 170.4 | 195 | 183.72 | 8.85 | 4.82 | -0.42 |
| 9. | Fruits | kg./person | 54 | 93.1 | 69.74 | 15.43 | 22.12 | 5.58 |
| 10. | Meat | kg./person | 72.2 | 77.2 | 74.9 | 1.92 | 2.56 | 1.69 |
| 11. | Milk | liters / person | 238 | 248 | 241.72 | 4.32 | 1.79 | -0.99 |
| 12. | Eggs | pieces /person | 287 | 331 | 306.2 | 17.46 | 5.7 | -3.5 |

*Source: data processed on the website www.insse.ro, accessed on 16.09.2021*

Analyzing the statistical indicators calculated for the main agricultural products per capita in Romania, in the period 2015-2019 resulted in a standard deviation between the limits of 0.11 kg /person for rye and 217.88 kg /person for corn. The coefficient of variation was between 1.79% for milk and 30.35% for maize, registering a high degree of homogeneity. Regarding the annual growth rate of agricultural production per capita, it was noted that for sugar beet, potatoes,

vegetables, milk and eggs were recorded negative values, which means decreases in production for these products in the analyzed time. (Table 2)

Climate change has a major impact on food security, in recent years there has been a major influence of climate change on food security. Research studies have shown that rising temperatures over the past 30 years have had a negative impact on average global wheat and corn production. Climate change that occurs every year is increasingly unpredictable and disastrous, and rising temperatures are leading to losses of agricultural land. (Oleiniuc, 2018)

**Table 3 - Evolution of the average annual consumption of food products per person during 2015-2019**

| Nr. crt. | Name of agricultural product | Unit | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|
| 1. | Bread and bakery products | kg./person | 101.88 | 98.892 | 98.424 | 96.528 | 95.1 |
| 2. | Fresh meat | kg./person | 41.22 | 40.728 | 42.528 | 43.2 | 43.524 |
| 3. | Meat products | kg./person | 13.38 | 13.44 | 14.424 | 14.868 | 14.856 |
| 6. | Milk | liters / person | 70.02 | 69.756 | 69.216 | 67.584 | 66.276 |
| 7. | Cheeses and sour cream | kg./person | 15.444 | 16.044 | 17.568 | 18.228 | 18.288 |
| 8. | Eggs | pieces / person | 163.188 | 161.244 | 162.744 | 161.196 | 163.788 |
| 9. | Fruits | kg./person | 44.904 | 45.972 | 46.764 | 48.336 | 48.0816 |
| 10. | Vegetables and canned vegetables | kg./person | 91.848 | 92.712 | 95.796 | 96.924 | 96.792 |

*Source: National Institute of Statistics, www.insse.ro, accessed on 16.09.2021*

Analyzing the average annual food consumption per person, an upward trend was observed, with the exception of products from the bakery and milk sector. At the level of the analyzed period, the consumption of haberdashery and bread products decreased by approximately 7%, in 2019 (95.1 kg/person) compared to 2015 (101.88 kg/person). For fresh meat, consumption increased by about 6% in the analyzed period, from 41.22 kg/person to 43.524 kg/person, at the same time the consumption of meat products increased by 11% in 2019 (14.86 kg/person) compared to 2015 (13.38 kg/person). (Table 3)

Milk consumption registered a decrease in this period by 5.35%, from 70.02 liters/person in 2015 to 66.28 liters/person, however for cheeses and cream there was an increase in consumption on inhabitant by 18.46% in the analyzed period.

Regarding the consumption of eggs, it was noticed that in the analyzed time interval, it remained relatively constant, noticing a slight increase, this being insignificant. For vegetables and fruits, the average annual consumption per capita increased during this period, by about 5% and 9%, respectively. (Table 3)

**Table 4 - Statistical indicators calculated for the annual consumption of food products per person in Romania at the level of the period 2015-2019**

| Nr. crt. | Name of agricultural product | Unit | MINIMUM | MAXIMUM | AVERAGE | STANDARD DEVIATION | COEFFICIENT OF VARIATION (%) | ANNUAL RATE OF GROWTH (%) |
|---|---|---|---|---|---|---|---|---|
| 1. | Bread and bakery products | kg./person | 95.1 | 101.88 | 98.16 | 2.57 | 2.62 | -1.71 |
| 2. | Fresh meat | kg./person | 40.73 | 43.52 | 42.24 | 1.22 | 2.89 | 1.37 |
| 3. | Meat products | kg./person | 13.38 | 14.87 | 14.19 | 0.74 | 5.20 | 2.65 |
| 6. | Milk | liters / person | 66.28 | 70.02 | 68.57 | 1.59 | 2.32 | -1.36 |
| 7. | Cheeses and sour cream | kg./person | 15.44 | 18.29 | 17.11 | 1.30 | 7.60 | 4.32 |
| 8. | Eggs | pieces /person | 161.2 | 163.79 | 162.43 | 1.17 | 0.72 | 0.09 |
| 9. | Fruits | kg./person | 44.9 | 48.34 | 46.81 | 1.44 | 3.07 | 1.72 |
| 10. | Vegetables and canned vegetables | kg./person | 91.85 | 96.92 | 94.81 | 2.37 | 2.50 | 1.32 |

*Source: data processed on the website www.insse.ro, accessed on 16.09.2021*

Following the analysis of statistical indicators calculated for the annual consumption of agricultural products per capita in Romania, in the period 2015-2019 resulted a standard deviation between the limits of 0.74 kg/person for meat dishes and 2.57 pieces/person for bread and confectionery. The coefficient of variation was between 0.72% for eggs and 7.60% for eggs. Regarding the annual growth rate of the average annual consumption of agricultural products per capita, it was noted that, for bread and bread and dairy products, negative values were recorded, which means decreases in production for these products in the analyzed time period. (Table 4)

The volatility of food prices in recent years has dramatically affected millions of people, endangering nutrition and food security worldwide. The level of price volatility in commodity markets has also jeopardized the prospects of less developed and developing countries for economic growth and poverty reduction. After stagnating at historic lows for decades, food prices have become significantly higher and more volatile since 2007. A first price spike occurred for almost all commodities in 2007-2008 and then reappeared in the first part of 2012, and the growth continues today. (FAO, 2011)

**Table 5 - Evolution of the average annual price of the main agricultural products in the period 2015-2019**

| Nr. crt. | Name of agricultural product | Unit | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|
| 1. | Wheat | RON/kg | 0.74 | 0.63 | 0.65 | 0.68 | 0.73 |
| 2. | Maize | RON/kg | 0.76 | 0.74 | 0.68 | 0.71 | 0.72 |
| 3. | Sunflower | RON/kg | 1.5 | 1.51 | 1.37 | 1.32 | 1.29 |
| 4. | Sugar beet | RON/kg | 0.16 | 0.13 | 0.13 | 0.13 | 0.14 |
| 5. | Live pork | RON/kg | 5.23 | 5.34 | 6.19 | 5.5 | 6.24 |
| 6. | Fresh cow's milk | RON / liter | 2.05 | 2.04 | 2.13 | 1.89 | 2.01 |
| 7. | Chicken eggs | RON/ piece | 0.52 | 0.51 | 0.55 | 0.6 | 0.62 |
| 8. | Telemea cheese made from cow's milk | RON/kg | 14.55 | 14.44 | 14.97 | 15.65 | 16.54 |
| 9. | Live beef | RON/kg | 6.05 | 5.93 | 6.34 | 7.11 | 7.21 |
| 10. | Live poultry | RON/kg | 3.96 | 3.99 | 3.83 | 3.56 | 3.67 |

*Source: National Institute of Statistics, www.insse.ro, accessed on 16.09.2021*

During the analyzed period, the average prices of the main agricultural products varied. There has been an increase in average annual prices for pork and beef, eggs and Telemea beef, while for cereals (wheat and maize), sunflower, sugar beet, fresh cow's milk and poultry meat recorded a decrease in them. In the next period, increases in prices for agricultural products are expected, following the appearance of extremely high temperatures that caused the pedological drought, which affected production in the last 2 years. (Table 5)

**Table 6 - Statistical indicators calculated for the average annual price of the main agricultural products in Romania at the level of the period 2015-2019**

| Nr. crt. | Name of agricultural product | Unit | MINIMUM | MAXIMUM | AVERAGE | STANDARD DEVIATION | COEFFICIENT OF VARIATION (%) | ANNUAL RATE OF GROWTH (%) |
|---|---|---|---|---|---|---|---|---|
| 1. | Wheat | RON/kg | 0.63 | 0.74 | 0.69 | 0.05 | 7.04 | -0.34 |
| 2. | Maize | RON/kg | 0.68 | 0.76 | 0.72 | 0.03 | 4.20 | -1.34 |
| 3. | Sunflower | RON/kg | 1.29 | 1.51 | 1.40 | 0.10 | 7.28 | -3.70 |
| 4. | Sugar beet | RON/kg | 0.13 | 0.16 | 0.14 | 0.01 | 9.45 | -3.28 |
| 5. | Live pork | RON/kg | 5.23 | 6.24 | 5.70 | 0.48 | 8.42 | 4.51 |
| 6. | Fresh cow's milk | RON / liter | 1.89 | 2.13 | 2.02 | 0.09 | 4.30 | -0.49 |
| 7. | Chicken eggs | RON/piece | 0.51 | 0.62 | 0.56 | 0.05 | 8.66 | 4.50 |
| 8. | Telemea cheese made from cow's milk | RON/kg | 14.44 | 16.54 | 15.23 | 0.87 | 5.73 | 3.26 |
| 9. | Live beef | RON/kg | 5.93 | 7.21 | 6.53 | 0.60 | 9.14 | 4.48 |
| 10. | Live poultry | RON/kg | 3.56 | 3.99 | 3.80 | 0.19 | 4.87 | -1.88 |

*Source: data processed on the website www.insse.ro, accessed on 16.09.2021*

Analyzing the statistical indicators calculated for the average annual price of the main agricultural products in Romania, at the level of the period 2015-2019, a standard deviation between 0.01 for sugar beet and 0.87 for Telemea cow's milk cheese was noticed. Regarding the annual growth rate, it showed negative values for: wheat, corn grains, sunflower, sugar beet, fresh cow's milk and live poultry, which means price reductions for these products in analyzed period. (Table 6)

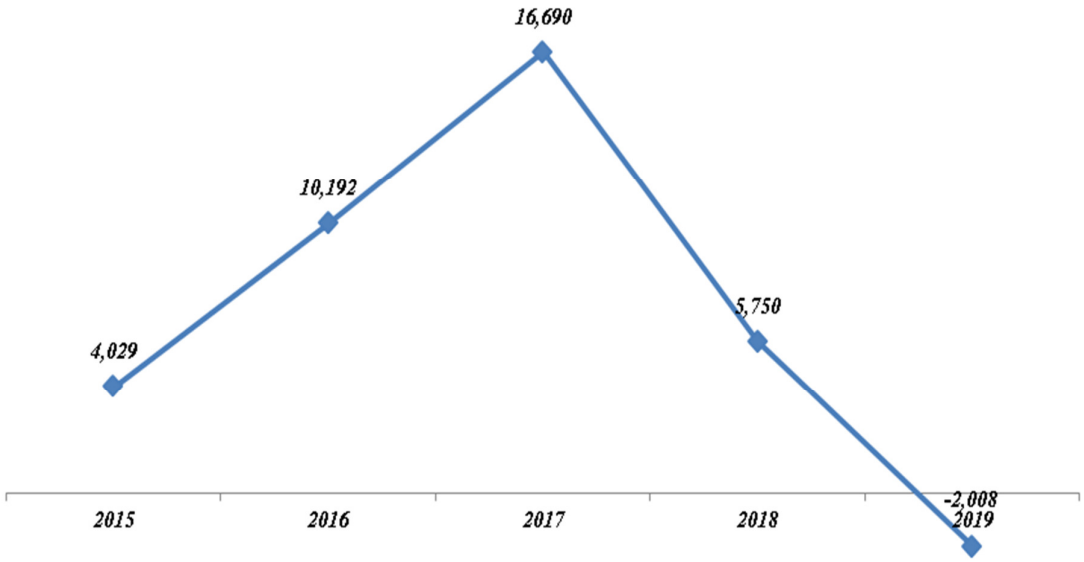


**Fig. 1 - The evolution of the trade balance registered for beef in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

In the period 2015-2019, the trade balance recorded for beef was oscillating, in 2019, there was a deficient trade balance, the ratio between export and import being negative, the value of imports exceeding that of exports. (Fig.1)

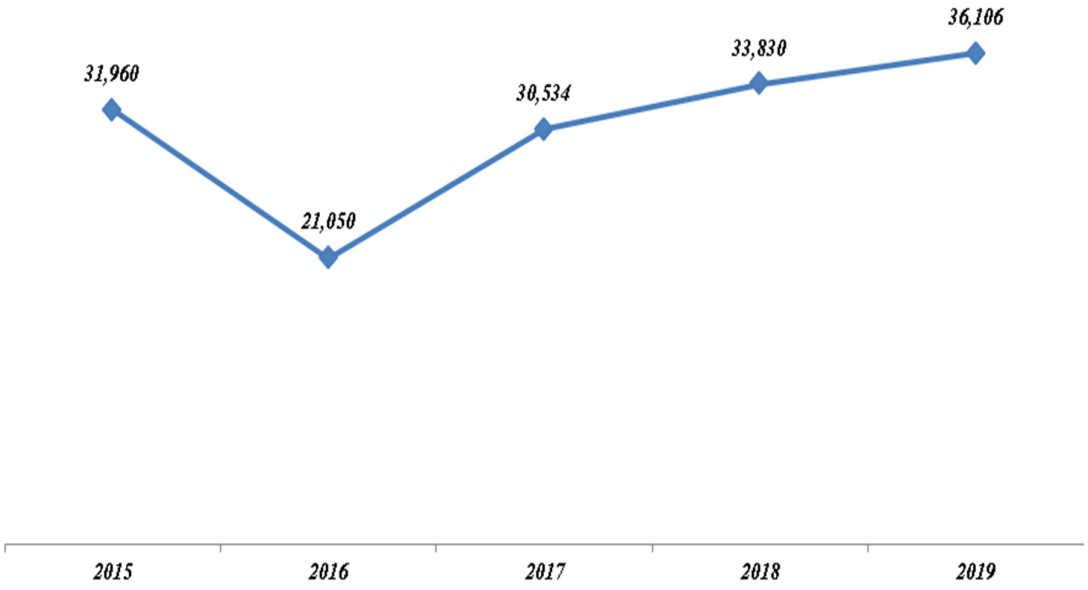


**Fig. 2 : The evolution of the trade balance registered for sheep meat in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

Analyzing the trade balance achieved for sheep meat in the period 2015-2019, there was a tendency to increase it. It registered limits between 21,050 thousand euros in 2016 and 36,106 thousand euros in 2019. It should be noted that during

this period the trade balance for sheep meat was positive, the value of exports being higher than the value of imports. (Fig.2)

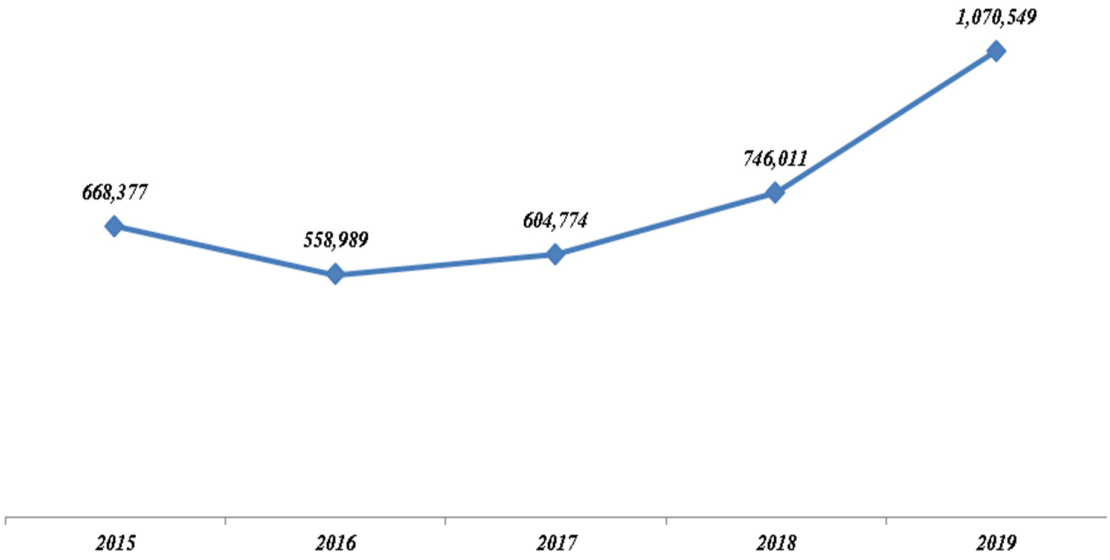


**Fig. 3 - The evolution of the trade balance registered in the maize crop in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

In the corn crop, in the period 2015-2019, the trade balance was a positive one, the value of the import made for the corn crop being significantly lower than the export value. It presented values between 558,989 thousand euros in 2016 and 1,070,549 thousand euros in 2019. (Fig.3)

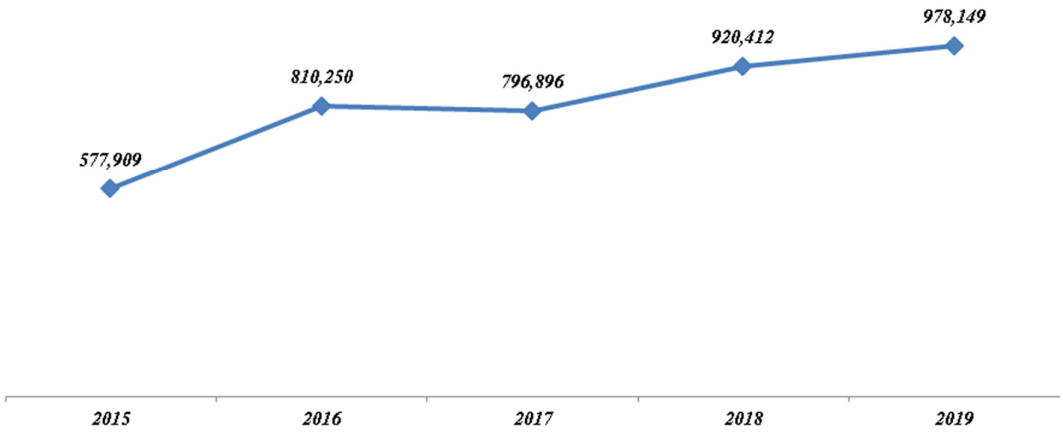


**Fig. 4 - The evolution of the trade balance registered wheat crop in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

The trade balance recorded for wheat was noted by an upward trend in the analyzed time interval, registering values between 577,909 thousand euros in 2015 and 978,149 thousand euros in 2019, the wheat trade balance being a positive one throughout the analyzed period. (Fig.4)

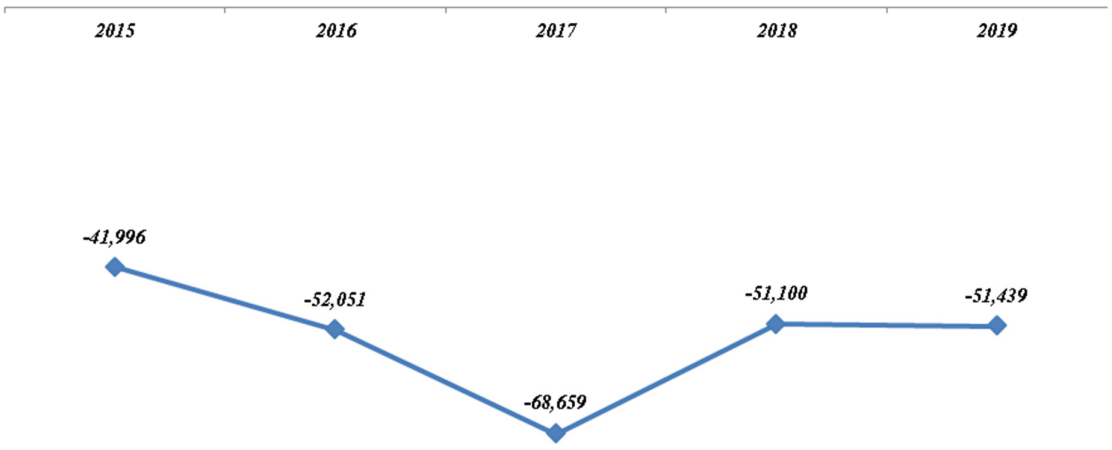


**Fig. 5 - Evolution of the trade balance for non-concentrated milk and cream in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

For non-concentrated milk and cream, in the period 2015-2019, the trade balance was deficient, the value of imports was exceeded by that of exports, thus resulting in negative trade balance values, between -41,996 thousand euros in 2015 and -68,659 thousand euros. (Fig.5)

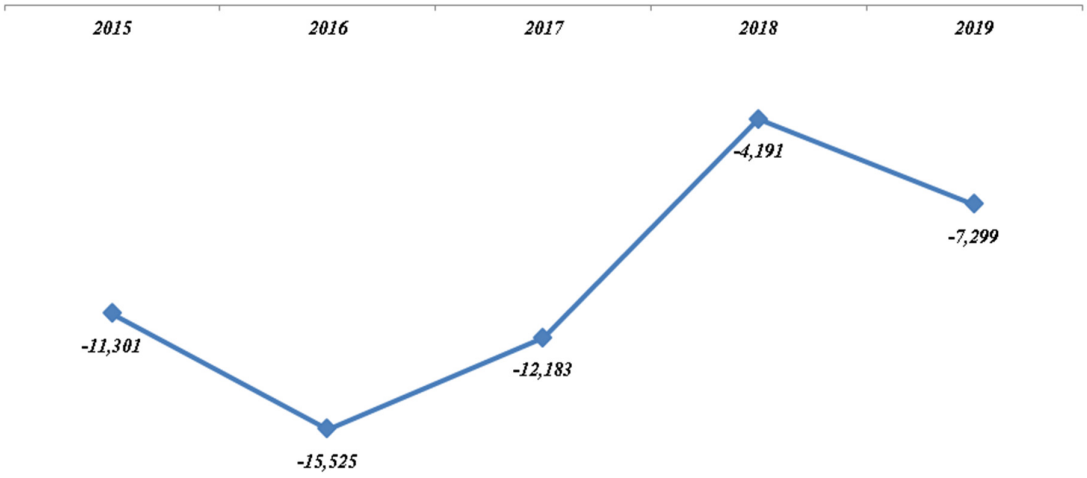


**Fig. 6. - The evolution of the trade balance recorded for eggs in the period 2015-2019**
*Source: data processed on the website www.intrcen.org, accessed on 16.09.2021*

During the analyzed period, the trade balance recorded for eggs was deficient, registering negative values between -15,525 thousand euros in 2016 and -4,191 thousand euros in 2019. It should be noted that, starting with 2018, the values of the trade balance tend to become positive. (Fig.6)

Another factor that affects unlimited access to food is food waste. The causes that lead to food losses vary throughout the world and largely depend on the specific conditions as well as the situation encountered in each country. Factors influencing food losses are: choice of crop production methods, internal infrastructure and production capacity, marketing chains, and distribution channels, followed by consumer purchasing and practices used in the underlying processes. food production. (FAO, 2013)

**Table 7 - The share of food waste in the European Union**

| Category | Percent |
|---|---|
| Households | 53% |
| Food processing | 19% |
| Food services | 12% |
| Primary production | 11% |
| Wholesale and retail | 5% |

*Source: European Commission (2012 estimates)*

From the table above it can be seen that in farms, households, in the processing and production of food, the largest quantities of food on the entire food chain are lost and wasted. In the first place in terms of food waste generation are households with a percentage of 53%. (Table 7)

**Table 8 - Food waste at the level of EU countries**

| Country | Unit | The amount |
|---|---|---|
| Netherlands | kg./person | 541 |
| Belgium | kg./person | 345 |
| Cyprus | kg./person | 327 |
| Estonia | kg./person | 265 |
| Poland | kg./person | 247 |
| UK | kg./person | 236 |
| Ireland | kg./person | 216 |
| Sweden | kg./person | 212 |
| Austria | kg./person | 209 |
| Finland | kg./person | 189 |
| Italy | kg./person | 179 |
| Hungary | kg./person | 175 |
| Luxemburg | kg./person | 175 |
| Germany | kg./person | 149 |
| Denmark | kg./person | 146 |
| France | kg./person | 136 |
| Spain | kg./person | 135 |
| Portugal | kg./person | 132 |
| Lithuania | kg./person | 119 |
| Slovakia | kg./person | 111 |
| Latvia | kg./person | 110 |
| Bulgaria | kg./person | 105 |
| Czech Republic | kg./person | 81 |
| Greece | kg./person | 80 |
| Malta | kg./person | 76 |
| **Romania** | kg./person | **76** |
| Slovenia | kg./person | 72 |

*Source: European Commission (2010 estimates)*

Food waste can take place at all points in the food supply chain, namely on the farm, processing and manufacturing, marketing, in restaurants and canteens, as well as in households. (European Parliament 2017)

The reasons for the production of food waste vary widely and are specific to each sector of activity. FAO studies have estimated annual food loss and waste worldwide by quantity about 40-50% of roots, fruits and vegetables, 35% of fish and seafood, 30% of cereals and 20% of oilseeds, meat and dairy products (FAO, 2015)

At the level of the European Union, Romania ranks on the penultimate place, next to Malta, in terms of the amount of food waste (76 kg / person), after Greece (80 kg / person) and the Czech Republic (81 kg / person). (Table 8)

## Conclusions

Food security presupposes the availability of the supply of agri-food products, which is conditioned by domestic agricultural production, by the market situation, by prices and trade policies. At the moment, Romania is at the limit in ensuring food security, being one of the countries dependent on imports, although in terms of production of major agricultural products, Romania can support food security. Currently, the trade balance of agri-food products is deficient, with the value of imports exceeding that of exports. Romania is one of the countries that exports raw materials (cereals) and imports finished products, not having the necessary resources to process these products.

At present, the agricultural production realized at the level of Romania, satisfies the consumption needs of the population, but the biggest problem that our country faces is the lack of efficient processing factories of agri-food products, to solve this problem it is necessary to make investments in development and establishment of processing plants, these investments can be made through European non-reimbursable funds.

The factor of particular importance, which entails the other causes of the gradual deterioration of food security are climate change. As a result of extreme natural phenomena leading to drought or floods, negative effects appear on agricultural production and implicitly on food security.

Another problem that leads to the emergence of insecurity both globally and nationally is the overpopulation of the globe. The research shows that the population is growing rapidly from year to year, putting pressure on stocks obtained from agricultural production.

Food security will remain a priority for Romania, so as to cover the food needs of the population. In order to support food security at European level, a target has been set to reduce food waste, given that more than 100 million tonnes of food are lost in Europe every year. Losses from agriculture and discards are not included in these estimates. This waste is found in all stages of the food chain: primary production, processing, retail/wholesale, catering services, consumption. The ecological, economic and social impact being very important.

One of the short-term initiatives is to raise public awareness of food waste. To this end, the EU launched an information campaign in 2012. It provides information and advice on the reduction of food waste, as well as clarifications on the words "preferably consumed before", which appear on food labels.

## Acknowledgment

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

## References


- Burbulea R. and Malancea I. (2008) ‘The role of the agri-food sector in ensuring food security’, Annals of the Free International University of Moldova (Economics Series), Nr.7, ISSN 1857-1468, 171-174;
- Campeanu V. (2019) Strengths And Weaknesses Of Romania’s Food Security In The European And Global Context, Journal of World Economy 11(2), 64-83;
- Ceapoiu N. (1968) ‘Statistical methods applied in agricultural and statistical experiences’, Ed. Agro-Silvica, Bucharest;
- European Parliament (2017) 'Food waste in the EU: millions of tonnes of food waste', [Online], [Retrieved May 15, 2017], https://www.europarl.europa.eu/news/en/headlines/society/20170505STO73528/risipa-alimentara-in- eu-millions-of-tons-of-garbage-food;

- FAO (2011) Price volatility and food security – A report by The High Level Panel of Experts on Food Security and Nutrition, [Online], [Retrieved July 2011], https://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE-price-volatility-and-food-security-report-July-2011.pdf;
- FAO (2013) Food wastage footprint: Impacts on natural resources, ISBN 978-92-5-107752-8;
- FAO (2015) Global Initiative on Food Loss and Waste Reduction. Rome, FAO, http://www.fao.org/3/a-i4068e.pdf;
- Istudor N., Ion R.A., Petrescu I.E and Hrebenciuc A. (2019) 'Agriculture and the Twofold Relationship between Food Security and Climate Change. Evidence from Romania', The AMFITEATRU ECONOMIC journal, Academy of Economic Studies- Bucharest, Romania, 21(51), 285-285;
- Matei Gherman G., Tach G. and Matei V. (2018) 'The Eradication Of Hunger At The World Level And Possibilities Of Increasing Agricultural Production', Economic Growth In Conditions Of Globalization: Competitiveness, Innovation, Sustainability, 1(1), 250- 251;
- Nica M. and Petre I.L. (2018) Nutritional Security In Romania, Proceedings Of The International Conference On Economics And Social Sciences, Bucharest University Of Economic Studies, Romania, vol.1, 68-74;
- Nicholson C.F.,Stephens E.C., Kopainsky B., Thornton P.K., Jones A. D., Parsons D. and Garrett J. (2021) 'Food security outcomes in agricultural systems models: Case examples and priority information needs', Agricultural Systems, 188:103030;
- Nicholson, C.F., Stephens E.C., Kopainsky, B., Jones, A.D., Parsons, D. and Garrett, J. (2021) 'Food security outcomes in agricultural systems models: Current status and recommended improvements', Agricultural Systems, 188:103028;
- Oleiniuc M. (2018) "Their Risks And Consequences On Food Security", Economic Growth In Conditions Of Globalizytion: Competitiveness, Innovation, International Conference on Theoretical and Applied Economic Practices,Vol 1, 259-265;
- Pawlak K. and Kołodziejczak M. (2020) 'The Role of Agriculture in Ensuring Food Security in Developing Countries: Considerations in the Context of the Problem of Sustainable Food Production', Sustainability, 12(13), 5488;
- Romanian National Institute of Statistics, [Online], [Retrieved September 09, 2021] http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table).