

EXPLORING AGRICULTURE IN ROMANIA. ANALYSIS OF CROPS AND PRODUCTIONS IN THE PERIOD 2014-2023

SÎRBULESCU ELENA CLAUDIA¹, ALDA SIMION*², FEHER ANDREA*¹, CHIRILĂ MARIANA³, CHIRILĂ DANIEL³

¹*University of Life Sciences "King Mihai I" from Timisoara, Faculty of Management and Rural Tourism, Timișoara, Romania*

¹*University of Life Sciences "King Mihai I" from Timisoara, Faculty of Engineering and Applied Technologies, Timișoara, Romania*

³*Politehnica University of Timisoara, Department of Physical Education and Sports, Romania*

*Corresponding author's e-mail: simion_alda@usvt.ro, andreafeher@usvt.ro

***Abstract.** The paper addresses agriculture in Romania, a vital sector of the country's economy, also influenced by factors such as subsidies received by farmers and European funds. We know that Romania has considerable agricultural potential, but the development of agriculture has been affected by economic, social and environmental challenges. European funds represent an important chapter in the activity carried out at the farm level. Romanian agriculture has managed to attract substantial funds in recent years from the European Union and to take steps towards modernization, especially through agribusiness projects considered the main driver. The analysis of agricultural crops shows changes in the cultivated areas and the average productions that have been obtained. Agriculture contributes only 4-5% to Romania's GDP, but it could become substantial in the coming period through the transition to digitalization, agribusiness and sustainability.*

***Keywords:** agricultural potential, food security, economic development, animal husbandry, plant cultivation*

INTRODUCTION

Agriculture plays a special role in ensuring food security, rural employment, and biodiversity, in addition to the conservation and protection of the natural environment [1,2,6].

Agriculture in general plays a crucial role in human survival, being the primary source of food, along with others [4].

Romania benefits from a vast agricultural territory and a favorable climate, with great potential in the agricultural sector. Romanian agriculture is not only a source of food, but also has a tradition that reflects the cultural and geographical diversity of the country, which has changed its trends, the cultivated areas being reduced from one year to the next. Agriculture in 2024 in Romania has registered losses, even if it remains the leader in cultivated areas, but in production has fallen behind [3,5].

Agriculture has traditionally been the backbone of the Romanian economy [3,15]. For Romania, a strong Common Agricultural Policy, an adequate budget and simplified rules will ensure predictability for farmers and contribute to territorial cohesion and food security in the European Union [12].

Agricultural policy is most often described and considered complex and compartmentalized. It is aimed at food production, farmers' welfare, regional development and rural areas, along with landscape conservation and others [8].

Romanian agriculture is marked by the inefficient allocation and use of resources and strongly affected by imbalances in the system, the prices of agricultural products and agricultural production inputs [7].

We certainly know that our country also has considerable agricultural potential, but the development of Romanian agriculture has been affected by economic, social and environmental challenges. Romanian agriculture has managed to attract substantial funds

in recent times from the European Union and to make the transition to modernization, mainly through agribusiness projects considered the main driver.

The objective of the article is to analyze agriculture in Romania, a vital sector of the country's economy that has natural potential to ensure the country's food security without any problems.

MATERIALS AND METHODS

Romania, benefits from a vast agricultural territory and a favorable climate, a remarkable potential for the agricultural sector. Located in the southeastern part of Europe, Romanian agriculture has been a central pillar for the national economy and contributes significantly to the formation of the country's gross domestic product.

The article identifies and analyzes the evolution of the areas cultivated with the main agricultural crops (cereals, potatoes, oilseeds, vegetables, fruit vineyards) that registered changes during the period under study, the dynamics of livestock (cattle, dairy cows, pigs, sheep and goats, poultry), the values of agricultural production (crop production, animal production and agricultural services) and its structure, but also the values of the main crops (cereals, potatoes, oilseeds, vegetables, fruits, potatoes, grapes) and the values of the main products of animal origin (total meat, pork, milk, eggs).

The data explored by the authors were collected from the Statistical Yearbook of Romania, 2014-2024, along with works and articles from the specialized literature. Based on the information collected, the authors of the article conducted their own comparative analyses, calculations of agricultural crops, the dynamics of animal husbandry and the main values of plant and animal production and interpretations, created tables and diagrams and issued the conclusions.

RESEARCH RESULTS

Romanian agriculture has experienced accelerated development over the last 10 years. The value of production has increased, reaching a value of 22.2 billion euros in 2023, compared to around 4.5 billion when it joined the EU in 2007. The spectacular evolution was made possible with the support of European subsidies of over 40 billion euros.

Agriculture in Romania, in addition to being a source of food, is also a tradition reflected in cultural and geographical diversity. The regions of Romania have their own agricultural particularities, but cereals constitute the basis of agriculture, being cultivated on a considerable arable area, as shown in Table 1. Wheat, corn and barley are among the main cereals cultivated.

The areas cultivated with potatoes in our country have decreased considerably by more than 50% and Romania has recorded the lowest potato harvest in recent years, according to the INS. The lack of space for their storage, the weather and the increasing costs are considered the main culprits, the consequence of this situation being the increase in the price of potatoes.

Vegetable growing is an important sector of Romanian agriculture, with a tradition and diversity of vegetable crops. With favorable conditions for the cultivation of a variety of vegetables, among the most cultivated are tomatoes, peppers, cucumbers, potatoes and onions.

In oilseed crops, the cultivated area has increased from year to year, and in 2023 compared to 2022 by 9.3%.

Significant potential exists in Romania for the cultivation of fruits, as a result of geographical and climatic diversity. Apples, cherries, plums, sour cherries and grapes are cultivated in Romania, providing an important contribution to the agricultural economy.

Romania's tradition is the cultivation of local varieties that are otherwise well adapted to the conditions of the country. It should be remembered, however, that climate change and reduced investments in technology determine negative effects on the productivity and quality of fruits.

Table 1.

Evolution of cultivated area, with main crops, 2014-2023 (thou hectares)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cereals	5443.2	5468.3	5487.0	5192.3	5257.2	5569.1	5348.9	5351.5	5183.8	5168.5
Potatoes	198.5	191.8	182.2	167.4	169.3	170.1	176.4	84.4	80.7	79.4
Oilseed crops	1496.5	1514.7	1629.5	1766.3	1815.0	1800.1	1681.9	1715.4	1701.3	1865.4
Vegetables	239.5	239.5	228.1	224.6	226.3	227.7	225.5	197.7	177.6	179.7
Bearing vineyards	176.7	178.1	178.2	177.3	177.5	178.2	177.4	165.6	161.0	165.0

Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

Table 2.

Livestock dynamics, 2014-2023 (thousands of heads)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Media 2014-2023
Cattle	2069	2092	2050	2011	1977	1923	1875	1827	1834	1815	1947.3
Cows	1307	1311	1315	1296	1280	1241	1231	1193	1194	1177	1254.5
Pigs	5042	4927	4708	4401	3925	3834	3785	3620	3329	3154	4072.5
Sheep and goats	10935	11250	11314	11485	11715	11954	11893	11580	11730	11722	11557.8
Poultry	78635	78648	75690	73289	73993	75365	71183	77148	78221	78750	75992.2

Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

Romania ranks in the top 3 in the European Union in sheep and goat breeding, a traditional activity that has been practiced since ancient times and has survived to the present day and is practiced for pleasure, which also brings attractive income to farmers.

According to the INS (Table 2), the cattle, pig, sheep and goat herds were decreasing in the period 2014-2023. The number of poultry also decreased.

The total number of cattle and the number of breeding stock have decreased. In 2023, the total number of cattle was 1.815 million heads, 19,000 heads less than in 2022, of which cows, buffaloes and heifers accounted for 1.177 million heads, 16,800 heads less.

In pigs and breeding stock (breeding sows), the number decreased by 5.2 percentage points, from 3329 thousand heads in 2022 to 3154 thousand heads in 2023.

The sheep and goat stock followed an upward trend, reaching a level of 11730 thousand heads in 2022 and decreasing by 9300 heads, to 11722 thousand heads in 2023.

The existing poultry stock in 2023 recorded an increase compared to 2022 of 0.7%.

In Romania, the value of agricultural production increased from one year to another, during the period 2014-2023, from 74.52 billion lei (previous prices) to 109.89 billion lei (current prices) in 2023, with an average of 87.21 billion lei. At the EU level, the value of agricultural production decreased by 1.5% in 2023, compared to the previous year, to 537.1 billion euros [11,13].

The value of agricultural production (Figure 1) recorded 74.524 billion lei in 2014, and agricultural services contributed 1.3% to the total value reported at national level. The agricultural production index recorded 102.9% of the total, 102.5% for the animal production category and 102.9% for the crop production category.

Crop production recorded a value of 66.26 billion lei in 2023, at current prices, while animal production recorded a value of 40.65 billion lei. Agricultural services were on the rise [10].

Crop production holds the largest share in the structure of the value of agricultural production (Figure 2), 66.5%, and in 2023 it was down by 5.3% compared to 2022.

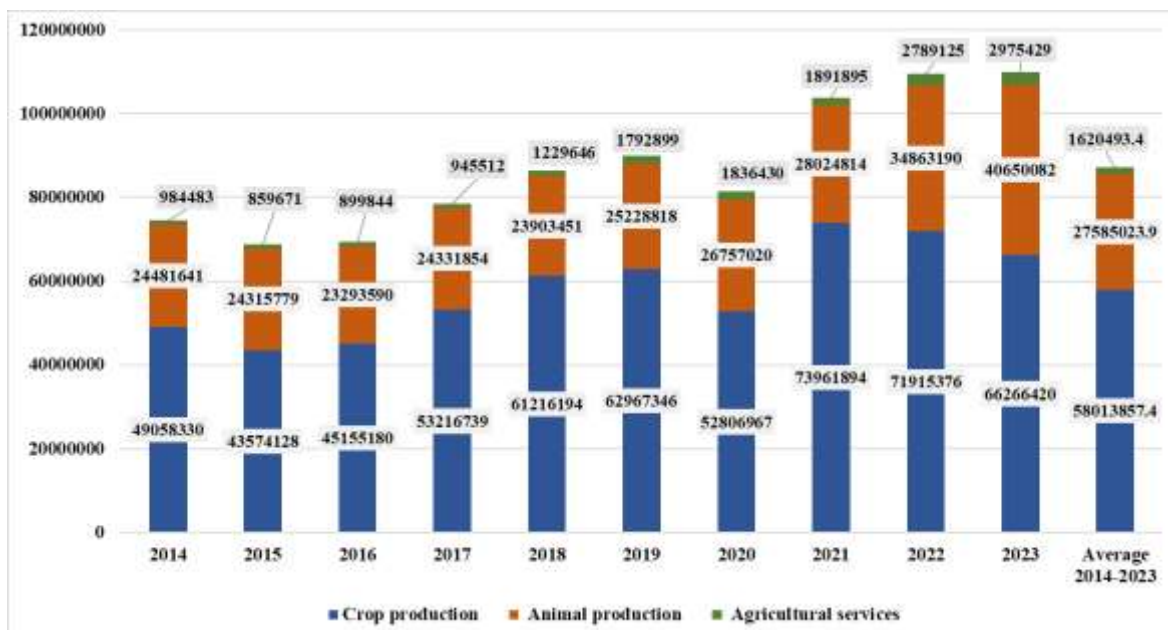


Figure 1. Agricultural production values 2014-2023 (thousands of lei current prices)
 Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

In 2014, the main share in the value of agricultural production (Figure 2) was the vegetable one of 65.8% (cereals 34.9%, vegetables and melons 17.2% and potatoes 10.5%), then animal production with 32.9% (the main share was the products resulting from the processing of milk on the farm 28%, cattle 25.2% and poultry 20.7%).

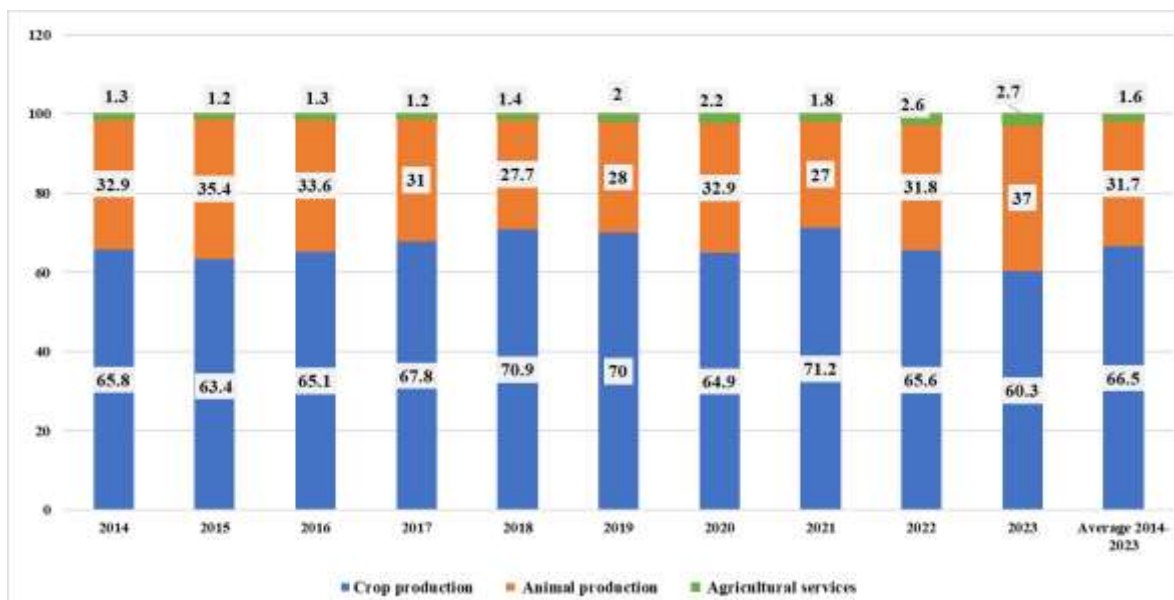


Figure 2. Structure of agricultural production values 2014-2023 (%)
 Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

In 2014, agriculture stood out as one of the key sectors of the economy, through record production and export revenues, and managed to close the trade balance of agri-food products in surplus. In early 2014, authorities and farmers estimated "irrecoverable

losses" in wheat and rapeseed caused by excessive heat and drought, and the rich rainfall that fell on time surprised farmers during the harvest with record yields.

Romania's cereal production (Figure 3) in 2020 decreased by almost 41% compared to 2019 (30.41 million tons), to 18.5 million tons. The yield decreased mainly due to the pedological drought in certain areas of the country, but also due to the reduced cultivated areas (5.34 million hectares in 2020 versus 5.56 million ha in 2019). The situation was similar in 2022.

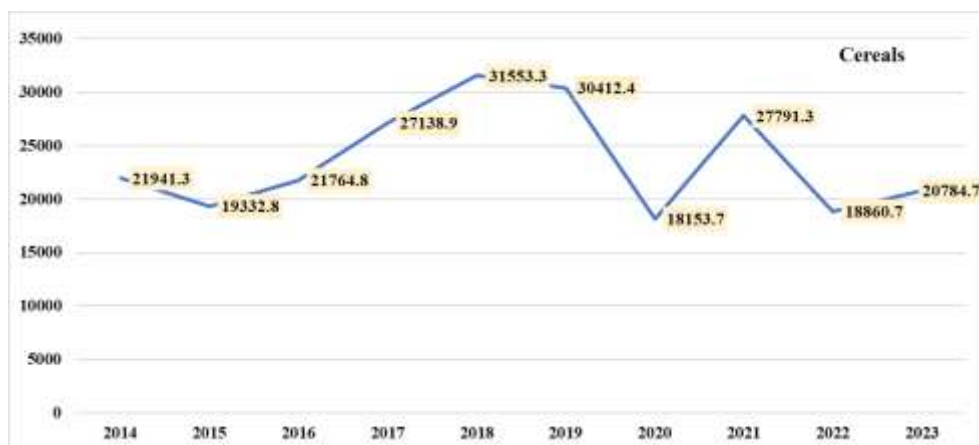


Figure 3. Cereal production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

The drought, but also the pandemic, caused many losses in Romanian agriculture in 2020, recording decreases in oilseed crops (Figure 4), where production was 3228.8 thousand tons, 1563.6 thousand tons less than in 2019. In 2021, the situation was remedied, the production value was 4574 thousand tons. The maximum production value was recorded in 2018, 5145.6 thousand tons.

In oilseed crops, production increased in 2023 compared to 2022 by 15.0%. Increases were recorded in rapeseed by 45.3% and soybeans by 23.0%, but in sunflowers there was a decrease of 3.7%. The production value of oilseed crops recorded an average of 3645.9 thousand tons for the period.

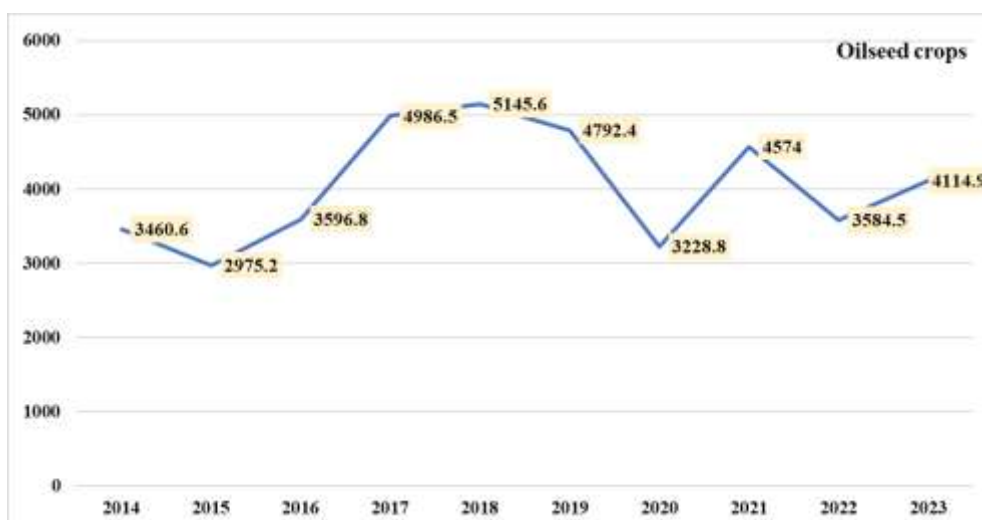


Figure 4. Oilseed production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

Romania has a high potential in terms of vegetables, a situation also reflected in the production obtained.

The highest production of vegetables (Figure 5) was in 2018 (3797.4 thousand tons), as well as for other crops as a result of climatic conditions.

Many changes affected the vegetable sector in 2023, when the lowest production value in the analyzed period was 2313 thousand tons. One of the challenges in the coming years will be the water problem. There were also storms that caused damage and affected the supply due to torrential rains and hail.

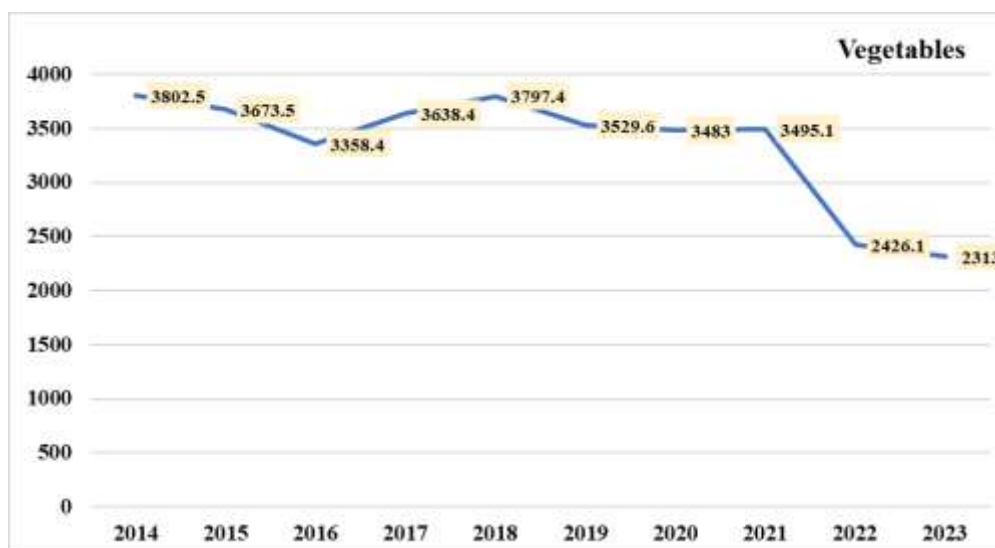


Figure 5. Vegetable production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

Potato production (Figure 6) has fallen dramatically, reinforcing a trend that began after 2017, when potato production reached a record high of 3.1 million tons. With insufficient production, Romania must rely on imports to meet its consumption needs [15].

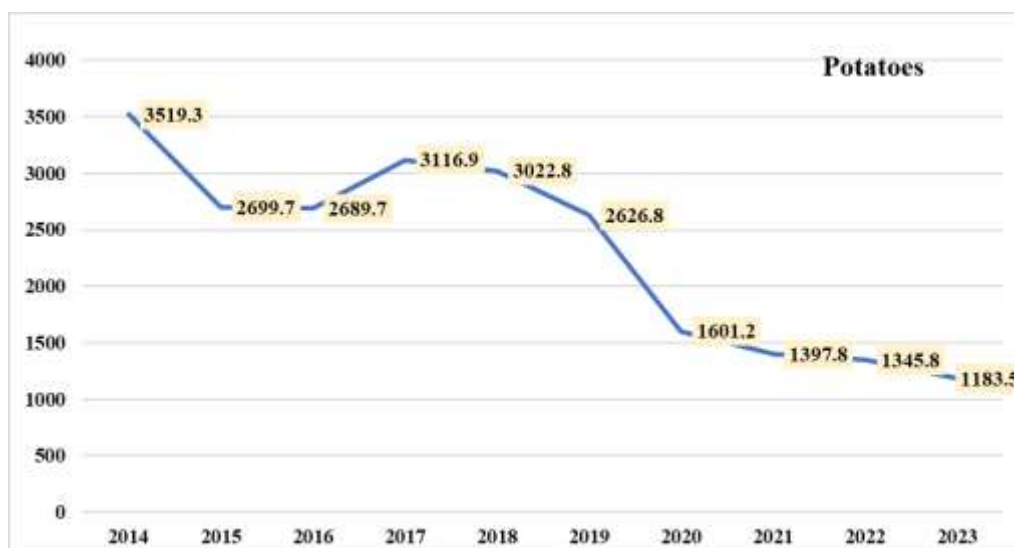


Figure 6. Potato production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

Fruit production increased from 1.3 million tons in 2014 to 1.8 million tons in 2018, an increase of 40%, decreasing to 1.46 million tons in 2023. The record value of fruit

production (Figure 7) was 2018, 1813.5 thousand tons, due to favorable climatic conditions.

Fruit production from orchards in 2021 registered higher values by 11.0% compared to 2020, due to increased yields/hectare and cultivated area.

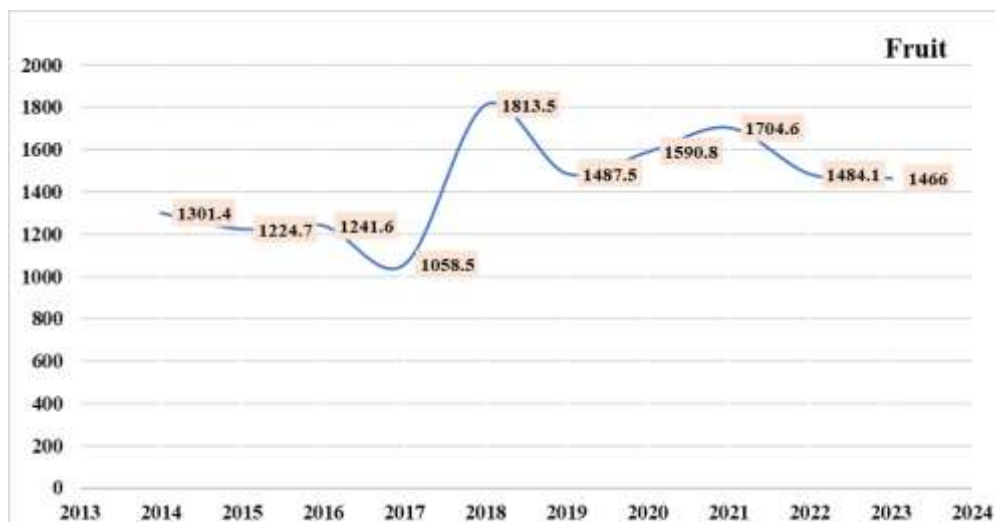


Figure 7. Fruit production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

In 2015, the value of grape production (Figure 8) increased by 2.3%, compared to 2014.

The record in Romanian agriculture for the value of grape production was recorded in 2018, 1144.3 thousand tons, due to special climatic conditions.

The year 2023 marked higher value of grape production, following the increase in yield per hectare (+7.6%), but also in cultivated areas by 1.9%.

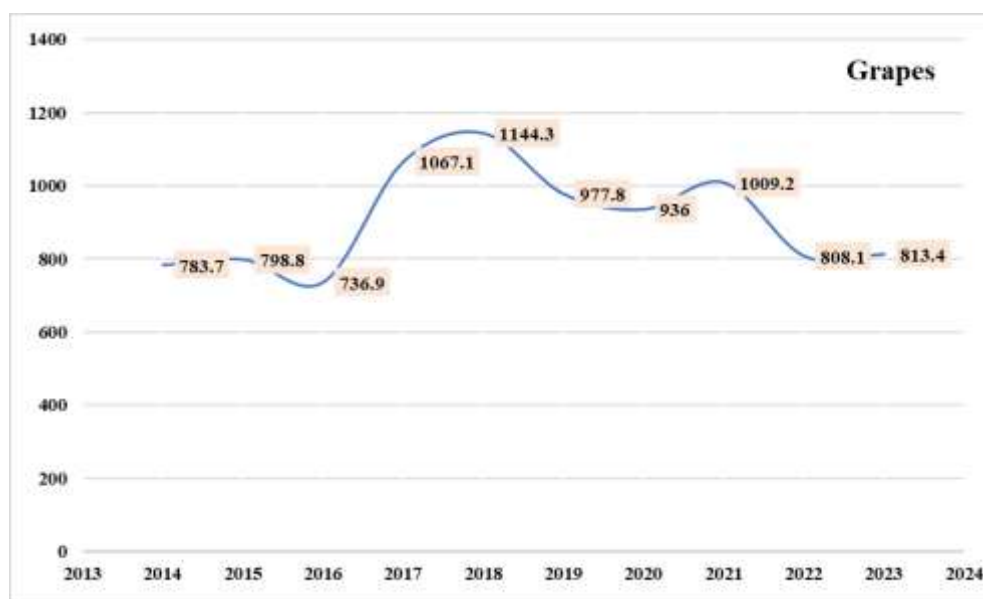


Figure 8. Grape production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024 [9]

Cow milk production (Figure 9) decreased in 2023 to 38.76 million hectoliters, the lowest level in the period under review (44.01 million hectoliters in 2014). In 2015, total milk production decreased by 2.7%.

In 2020, cow milk production (including for calf consumption) was 39.90 million hectoliters, and in 2021 it decreased to 39.21 million hectoliters.

As a result of the regress in the dairy cattle sector in terms of numbers, cow milk production is also decreasing, especially since we are witnessing a market with unfair competition, which is also affected by massive imports, which affect domestic producers.

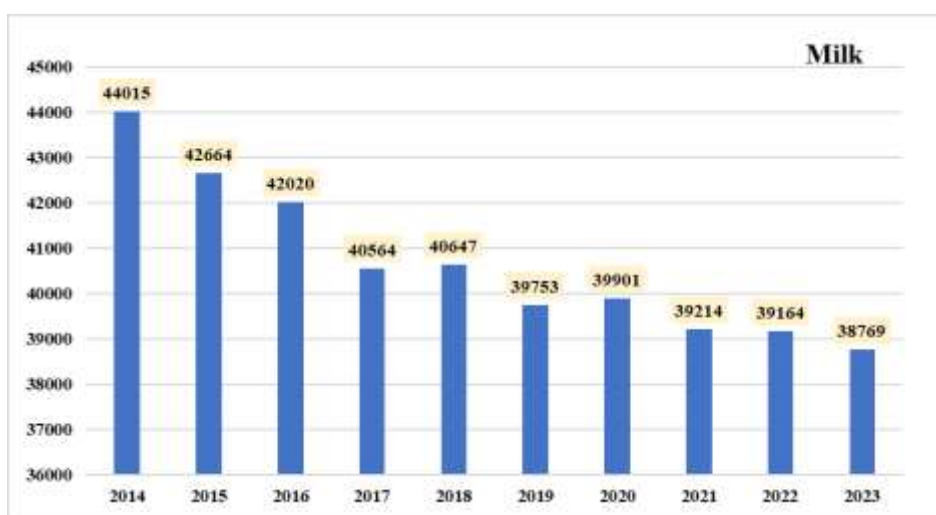


Figure 9. Cow milk production values 2014-2023 (thousand hl)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

Among animal products, meat ranks first in consumer preferences. According to the INS, in Romania, total meat production from 2014-2023 registered small variations, but overall it is decreasing. The year 2015 was marked by an increase in meat production compared to 2014, an increase that continued until 2019. In the period 2020-2023, no significant changes were found in the structure of meat production. The highest value of total meat production was recorded in 2019, 1495 thousand tons.

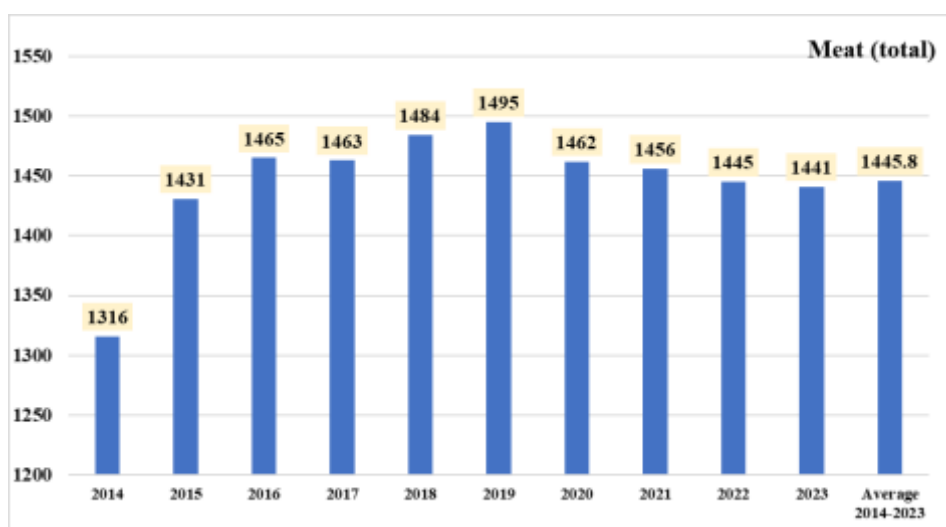


Figure 10. Meat production values (total) 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

In Romania, pork is the most consumed meat (Figure 11), even before poultry and beef. The problem is that domestic production covers only 30% of consumption, the largest amount coming from imports.

Pork production between 2017-2023 continued to decline, with the minimum being in 2023, at 421 thousand tons, due to the decrease in the number of pigs slaughtered and the multiple episodes of African swine fever, especially in 2022 and 2023.

The same situation occurs with pork production in the EU, which is slightly decreasing. Outbreaks of African swine fever continue to be a risk for production. In 2025, per capita pork consumption in the EU is expected to stabilize at 30.9 kg, but uncompetitive EU pork prices make exports to the global market a real challenge [14].

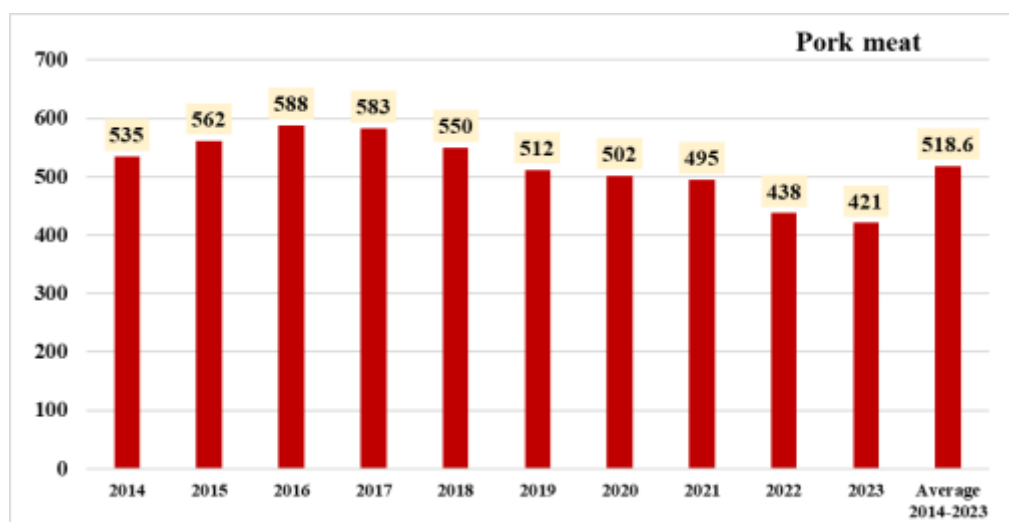


Figure 11. Pork production values 2014-2023 (thousand tons)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

Romanian poultry farming represents the most performing and dynamic sector of animal husbandry in our country.

Egg production decreased in 2023 (5,869 millions of pieces) compared to 2022 (6,005 millions of pieces) by 2.3% from data provided by the INS.

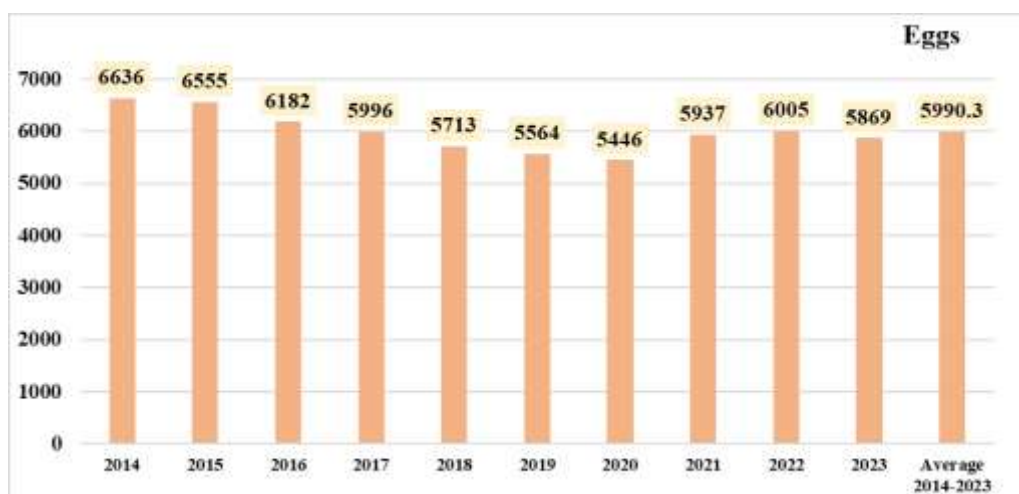


Figure 12. Egg production values 2014-2023 (million pieces)

Source: <https://insse.ro>, *Anuarul Staistic al Romaniei 2015-2024* [9]

From the analysis of egg production (Figure 12) in the period 2014-2023, we found a fluctuating trend concerning Romania. Values between 6636 million pieces, in 2014, and 5869 million pieces, in 2023, were recorded, with an average of 5990.3 million pieces for the period.

Romania through its immense agricultural potential and diverse opportunities for the progress of the agricultural sector. Through the contribution of continuous investments and effective policies, Romania can become a leader in sustainable agriculture, contributing to ensuring food security along with long-term economic development.

CONCLUSIONS

The future of Romanian agriculture depends on the country's ability to face current challenges and capitalize on available opportunities. Among the central pillars we can list the innovation and sustainability necessary for a modern and prosperous agriculture. Education and professional training for farmers must also be taken into account, essential aspects for ensuring the adoption of good practices and technologies applied to agriculture.

The Romanian government and institutions need to collaborate in order to be able to elaborate and develop policies that support farmers, to emphasize investments in infrastructure and research and development specific to the agricultural sector. It is very important for Romania to have diversified export markets and to promote its agri-food products internationally. Also, Romania's quality and diverse products can become assets in attracting global consumers.

Romanian agriculture has developed at an accelerated pace in the last 10-15 years, as a result of the implementation of quality standards, but also of increased access to European funding. This is recognized by Romanian farmers, beneficiaries of subsidies and common agricultural policies, essential pillars for accelerating productivity.

Romanian agriculture has been and is marked by challenges and changes, and we appreciate the need for sustainable policies to ensure a prosperous future for farmers, as well as a strategic approach to managing agricultural resources, namely protecting the soil, but also creating fair conditions for farmers.

Increasing investments in infrastructure, taking measures to protect the soil and supporting the development of the local food industry, will support agriculture to become the main pillar of the Romanian economy.

From the analysis carried out, we can say that Romanian agriculture has changed its trends so that the cultivated areas continue to decrease from year to year, as well as the number of animals, especially in the case of pigs and cattle. Among the main crops are corn, common wheat, rapeseed and sunflower.

The value of production has increased three times, up to the value of 22.2 billion euros in 2023, compared to the moment of joining the EU, this being possible with the support of European subsidies,

We can conclude that Romanian agriculture has the potential to contribute to economic and sustainable development. The adoption of innovative practices and technologies in agriculture can make it resilient to climate change and competitive on the world market.

The future of agriculture in Romania should not be about survival and poor results but should follow the path of transformation and evolution.

REFERENCES

- [1]. **BURJA V., SZORA A.T., DOBRA I.B.**, 2020, Land concentration, land grabbing and sustainable development of agriculture in Romania Sustainability, 12(5), 2137, <https://doi.org/10.3390/su12052137>
- [2]. **FEHER A., STANCIU S., IANCU T., ADAMOV T.C., CIOLAC R.M, PASCALAU R., BANES A., RAICOV M., GOSA V.**, 2022, Design of the macroeconomic evolution of Romania's agriculture 2020–2040, Land Use Policy, 112, 105815, <https://doi.org/10.1016/j.landusepol.2021.105815>
- [3]. **JURJESCU A.L., ADAMOV T., DAVID FEIER S., MATEOC-SÎRB N.**, 2022, Trends of the romanian agriculture. Dynamics of trade exchanges at the main crops, Lucrari Stiintifice Management Agricol, 24(1), 54-61
- [4]. **MANA A.A., ALLOUHI A., HAMRANI A., REHMAN S, EL JAMAOU I., JAYACHANDRAN K.**, 2024 , Sustainable AI-based production agriculture: Exploring AI applications and implications in agricultural practices, Smart Agricultural Technology, 7,100416, <https://doi.org/10.1016/j.atech.2024.100416>
- [5]. **MILIN A.I., RUJESCU C., MERCE I., SICOE-MURG O., SÎRBULESCU C.**, 2024, Conventional agriculture - theoretical analysis of profitability, Lucrari Stiintifice Management Agricol, 26(2), 101
- [6]. **PRADHAN S., SAHOO B.B.**, 2023, Farming: Innovations for Sustainable Agriculture, DOI:10.30954/NDP-farming.2023.4, In book: Farming for the Future Smart Agriculture Innovations Publisher: Renu Publishers
- [7]. **SÎRBULESCU C., PÎRVULESCU L., CRISTEA T., BRAD I., DINCU A.-M.**, 2016, Study regarding the performances of main sectors of activity from Romania's agriculture, SGEM-Conference Proceeding, 5(3), 561-568
- [8]. **VIK J.**, 2020, The agricultural policy trilemma: on the wicked nature of agriculture policy making, Land Use Policy, 99, 105059
- [9]. ***, <https://insse.ro>, Anuarul Staistic al Romaniei 2015-2024, accessed on 20.03.205
- [10]. ***, <https://agrintel.ro>, accessed on 18.04.2025
- [11]. ***, <https://commission.europa.eu/>, accessed on 08.04.2025
- [12]. ***, <https://www.cotidianulagricol.ro/>, accessed on 10.03.2025
- [13]. ***, <https://www.ceccarbusinessmagazine.ro/>, accessed on 18.04.2025
- [14]. ***, <https://foodbiz.ro/>, accessed on 18.04.2025
- [15]. ***, <https://revista-ferma.ro>, accessed on 21.04.2025
- [16]. ***, <https://www.stiriagricole.ro>, accessed on 23.04.2025