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SUNFLOWER CROP PERFORMANCE IN ROMANIA: A COMPARATIVE ANALYSIS AT THE EUROPEAN LEVEL

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Abstract: *This study aims to present and analyze the sunflower culture, aiming to highlight Romania's position at European level. The analyzed statistical data have as source the national database INSSE and the European database Eurostat, for the period 2019-2023. In order to create a larger image of the sunflower crop, the following indicators were analyzed: surfaces, yields, average yields, import and export of sunflower at national and European level. Sunflower culture plays an important role globally, being cultivated in most states, with areas varying depending on the region and the climate. The main products (seeds), as well as secondary products (turts, stems, leaves) are of great importance, being valued in various fields and industries. In 2023, Romania ranked first among European countries in terms of cultivated area and sunflower production. The performances recorded in recent years have strengthened Romania's position as a leader in terms of sunflower culture, emphasizing how it manages to exploit and effectively capitalize on this agricultural resource*

Key words: *sunflower, indicators, surfaces, productions*

Clasificare JEL: Q10

INTRODUCTION

Sunflower crop is widely spread worldwide, ranking fourth in the world after corn, wheat and rice, and its expansion is due to various uses. Alongside soybeans and rapeseed, it constitutes one of the essential oil crops in the European Union [8].

Sunflower (*Helianthus annuus*) is grown in more than 72 countries located in temperate climates. In the ranking of oilseeds, which include plants such as soybeans, rapeseed, cottonseed and peanuts, sunflower is ranked 5th globally in terms of annual production, according to the report, with a quantity between 32 and 44 million tonnes [2].

Agricultural crops in southern and eastern Europe are at risk of heat stress and drought during development, which can cause significant production losses and changes in the composition of fatty acids, including a reduction in oil content. [7] However, sunflowers have retained their competitiveness through continuous innovation in genetics, cultivation techniques and research for value-added creation, this has led to greater market segmentation. [3], [4].

Although it has moderate drought resistance, sunflower crop is negatively affected by extreme heat conditions, which can lead to significant declines in fertility and yield. In order to ensure sustainable production in the face of climate change, it is crucial to identify and integrate drought resistance traits into breeding programmes. The use of wild species of *Helianthus* as genetic sources can support the development of more resilient hybrids, thus contributing to the future of sunflower farming. [1].

Climate change will significantly affect European agriculture, causing more frequent and prolonged droughts, which will lead to lower yields in the southern regions, but could improve conditions for cultivation in the northern regions. Sunflower, a drought-resistant crop, is becoming a viable solution for farmers looking to adapt to new climate conditions. [2].

In the face of climate change, farmers have adopted measures to maintain the yield of sunflower crop, choosing hybrids with high performance and drought resistant. They also adjusted the timing of sowing and plant protection strategies. These adaptations are crucial to ensure stable production and meet climate challenges, highlighting the need to analyse the specific conditions of each farm in order to maximise agricultural efficiency. [3], [5].

MATERIALS AND METHODS

This study has the objective of analyzing the sunflower culture, in order to highlight the position of Romania at European level. The statistical data used and processed are based on national and Eurostat data for the period 2019-2023. In order to obtain a more complete picture of the culture taken in the study were analyzed indicators such as: cultivated areas, yields and yields obtained per hectare as well as exports and imports of sunflower.

This type of study has been conducted over the last years, this paper aims to contribute to updating data and to propose new perspectives for sunflower culture. Both sunflower production and trade are a constant topic of interest, given the economic importance of culture at national and European level.

RESULTS AND DISCUSSION

Sunflower, at European level, is one of the most important oilseed plants, with an essential role in the supply of vegetable oil in the European Union.

In the period 2019-2023, EU-27 recorded a continuous increase in sunflower-growing areas, the average period being 4.54 million hectares, with an average production of 9.78 million tonnes, with a yield of 2.16 tonnes per hectare.

Analyzing the areas cultivated with sunflowers at EU-27-member state level, a hierarchy of them can be seen in the figure below. Romania, Bulgaria and France are the main sunflower growers with average areas of 1.14 million hectares, 851.6 thousand hectares, respectively 754.7 thousand ha, with a share of 25.2%, 18.7%, respectively%, 16.6%, respectively%. Countries with areas below 50 thousand hectares are Croatia, Poland, Austria, Portugal and Slovenia, shares of the average total period below 1% (Figure 1).

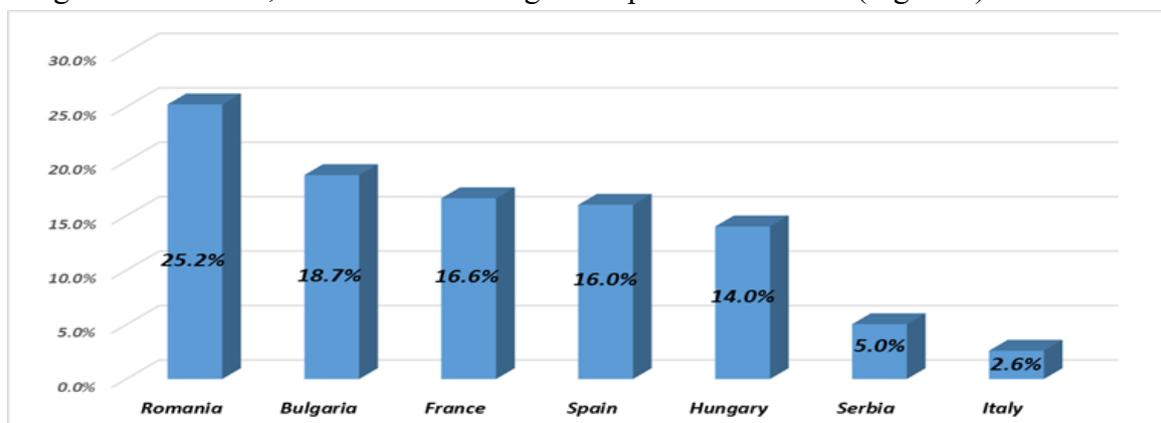


Figure 1. Main sunflower growers at EU-medium-area level (% of the average period)

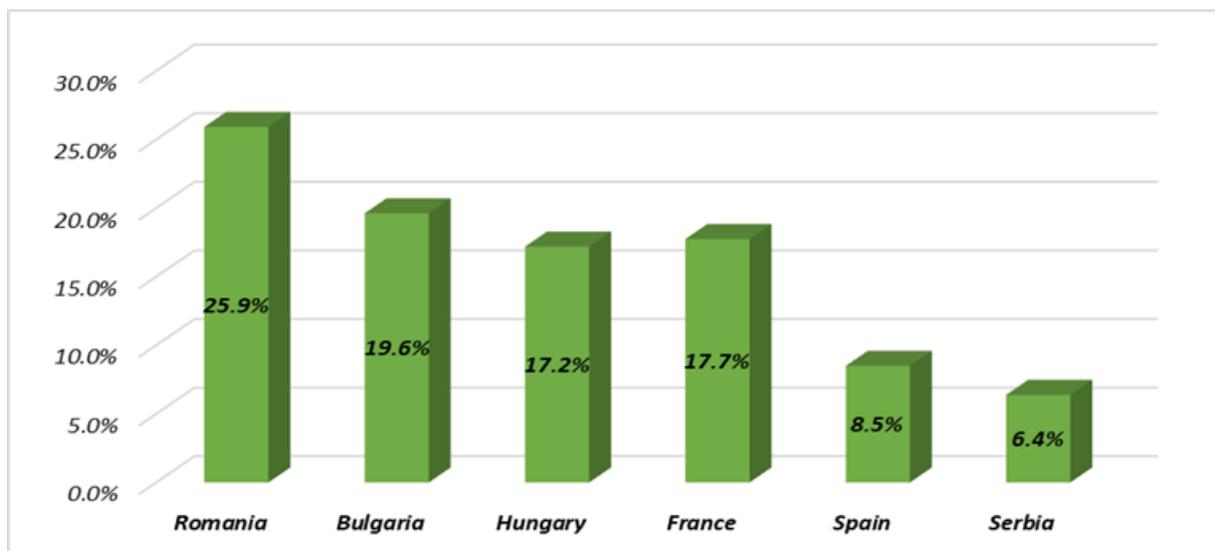
Source: data processed by the author, Eurostat

As regards sunflower production, it was found from the analysis of the available data that states can be differentiated as follows:

- countries with production over 1 million tons: Romania, Bulgaria, Hungary and France with average values of the period of 2.53 million tons, 1.91 million tons, 1.73 million tons and 1.68 million tons, with shares of 25.9%, 19.6%, 17.7% and 17.2% (Figure 2).

- States with production between 1mil. tons - 100 thousand tons: Spain, Serbia, Italy, Slovakia and Croatia with values of 830 thousand tons, 624 thousand tons, 290 thousand tons, etc, 162 Thousand tons and 131 thousand tons respectively.

- states with production of less than 100 thousand tons: Slovenia, Poland, Germany and Austria.



**Figure 2. Main sunflower producers at EU-average level
(% of total average production)**

Source: data processed by the author, Eurostat

Taking from the study the average yields per hectare was found that states are divided into two groups: average yields below the EU-27 average, of 2.16 thousand tons/ha, respectively, here we refer to Hungary, Portugal and Poland and the group with average productions above the European average: Romania, Germany, Bulgaria, France with values of 2.19 thousand tons/ha, 2.21 thousand tons/ha, etc, 2.25 Thousand tons/ha, The highest average production values are recorded by Austria, Serbia and Croatia: with 2.74 thousand tons, 2.74 thousand tons/ha and 2.94 thousand tons, respectively.

Although the three countries mentioned have small areas, the production is a high fact supported by the high yield per hectare.

A hierarchy of EU-27 member countries according to yield per hectare is shown in the figure below. (Figure 3)

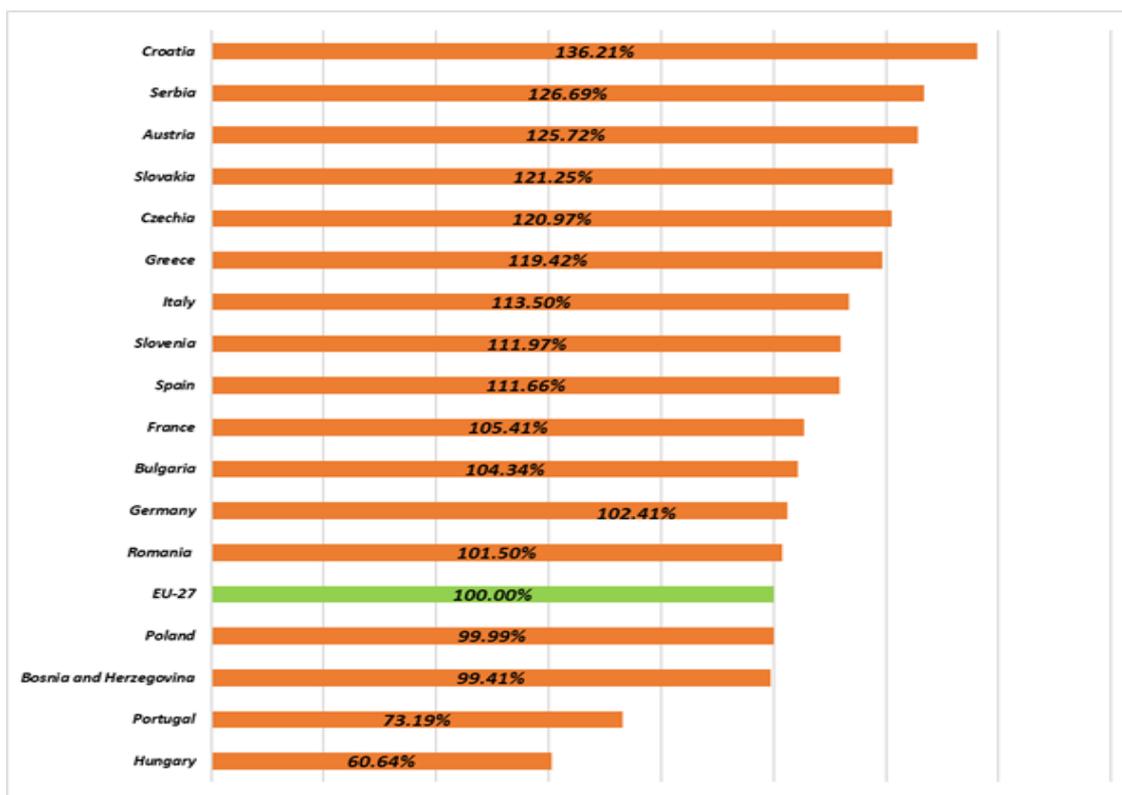


Figure 3. Position of sunflower producers versus average production per hectare at EU-27 level (% of average total yield EU-27)

Source: data processed by the author, Eurostat

Sunflower trade is essential for European agriculture, given that many European Union countries are producers and importers of sunflower products: oil and seeds. European countries are among the largest consumers of sunflower oil in the world, but it is also a relevant exporter in this field.

Analyzing the export of sunflowers at EU-27 level, it was noted that the amount of sunflowers increased by 21.9% in 2022 compared to 2019 (Figure 4).

At the level of 2022, the main exporters of sunflowers in EU-27 were: Romania, Bulgaria and France with values of 1453.46 thousand tons, 660.23 thousand tons and 657.08 thousand tons, respectively. The three countries with special export importance recorded significant differences in 2022 compared to 2019: -29%, -9.81% and +34.18%.

The exporting countries with the lowest quantities are: Ireland, Lithuania and Finland with values of 16.09 thousand tons, 331.03 thousand tons, 362.13 thousand tons.

A significant increase in exports in 2022 was recorded by Poland and Greece, 4.85 times and 6.41 times more than in 2019.

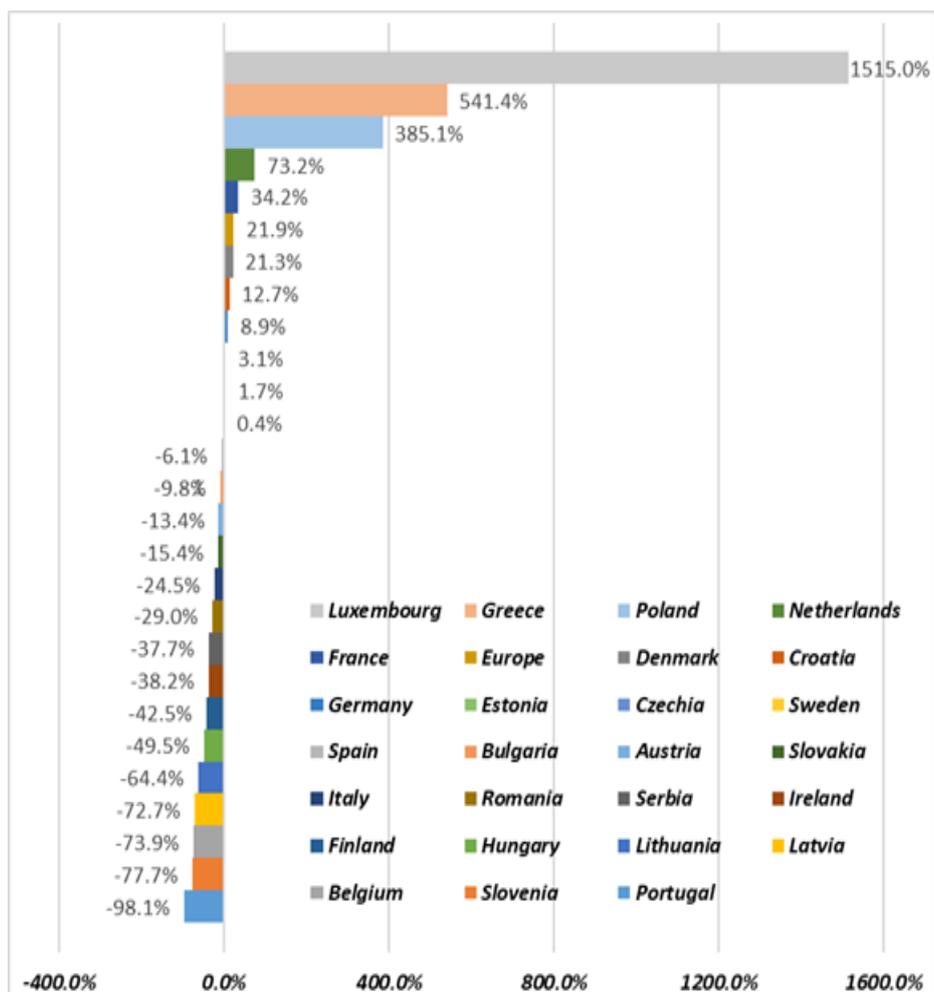


Figure 4. Export (%) 2019 compared to 2022

Source: data processed by the author, Eurostat

As regards the import of sunflower in 2022, at EU-27 level the amount of sunflower increased by 31.94% in 2022 compared to 2019. The highest quantities were recorded in Bulgaria, Hungary, Romania, the Netherlands, Spain and Germany, the latter have experienced fluctuations in the quantity imported according to the need of the country.

Compared to the growth share of sunflower imports at EU-27 level, 2022 compared to 2019 recorded the highest increases in: Croatia, Hungary, Slovakia and Bulgaria. Negative weights were recorded by Ireland, Slovenia, Greece and France.

Romania recorded at the level of 2022, an import of 653.66 thousand tons of sunflower, which is 2 times higher than in 2019 (325.26 thousand tons).

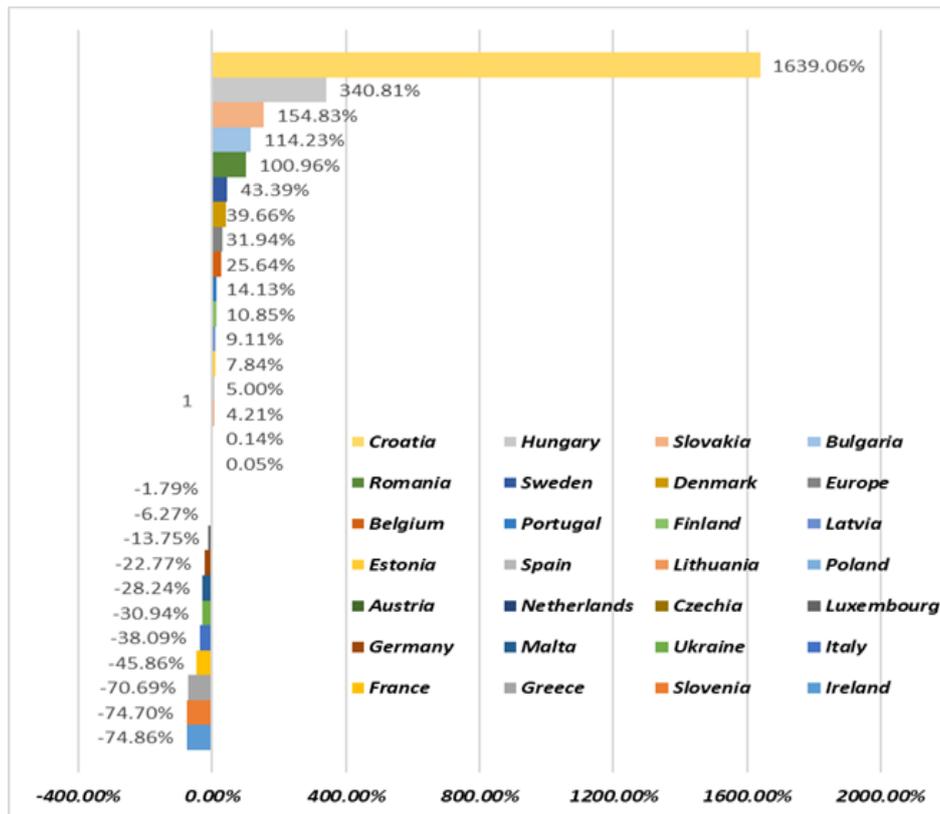


Figure 5. Import (%)2019 compare to 2022

Source: data processed by the author, Eurostat

Romania plays an essential, central and strategic role in the production and trade of sunflowers at EU-27 level, which may be due to agricultural, economic and geopolitical factors. The position of the country is consolidated on the European sunflower market due to the following aspects:

- cultivated area: Romania has one of the largest sunflower-grown agricultural areas, over 1.2 million hectares.

- favorable climatic conditions: some agricultural areas such as South-Muntenia, Dobrogea and Oltenia region have favorable agro-climatic conditions for sunflower culture, and, which helps to get high yields per hectare.

- production obtained annually: In 2023, Romania was the largest sunflower producer in the European Union, contributing with about 30% to the total European production.

- export to the EU and world markets. Romania exports a large amount of sunflower seeds and oil. European countries importing Romanian sunflowers: Germany, Spain, Italy and France. One of the biggest competitors on the sunflower market is Ukraine, but being affected by the war, Romania has taken over part of the market shares, becoming one of the important suppliers. Regarding the demand for sunflower oil, the war in Ukraine led to an increase in oil in Romania, given the reduction of stocks at EU-27 level.

- Agricultural Policy and support for oil crops. Oil crops under the new CAP 2023-2027 are receiving increased attention in order to reduce dependence on imports of vegetable oils from EU-27. Romanian farmers also benefit from this financial support by collecting incentives to continue the cultivation of sunflowers.

- The greatest risk encountered with sunflower culture is climate variability. In 2022 Romania faced extreme drought, while in 2023 there were favorable conditions. In the face of climate challenges and increasing competitiveness in the European market, Romania needs a better management of water resources and investments in innovation and processing of sunflower seeds and products with added value, what could provide a competitive advantage over other European producers.

CONCLUSIONS

Romania has a central position in sunflower production and trade within the EU-27, with one of the largest cultivated areas and being a major supplier of vegetable oil. The steady expansion of cultivated areas between 2019 and 2023 demonstrates the ability of the sector to adapt to market demands and stimulate economic growth. However, yields differ between member states, influenced by factors such as technology, climate conditions and the efficiency of agricultural management.

International sunflower trade is essential for the European economy, with a notable increase in demand for sunflower seeds and oil. However, the sector faces major challenges related to climate change that can affect long-term production and sustainability.

Investments in advanced agricultural technologies and water resources management are critical to maintaining the competitiveness of Romania and other member countries in this sector. The Common Agricultural Policy (CAP) provides important support to farmers, facilitating the development of oil crops and reducing dependence on imports.

Despite the challenges encountered, the sunflower sector has considerable growth potential, but in the long run, success depends on implementing innovative strategies that meet market demands and mitigate the impact of climate variability.

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