

Particularities of the Tomato Market in Romania in the Period 2019-2023

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Abstract. *The research presents the dynamics of the tomato market in Romania in the period 2019-2023. The work is structured in two parts. The first part analyzes the production potential of Giurgiu country for the category of products – tomato, compared to the area and production of tomatoes in Romania. The second part presented an analysis of the statistical indicators representative of the tomato market in Romania, with an emphasis on the analysis of the tomato trade, the aim being to identify the export and import profiles and trade trends of Romania. The results of the study showed a reduction in tomato production in the period 2019-2023, which can be attributed to the reduction of areas. Currently, the tomato market in Romania presents a significant deficit in the trade balance. Considering this context, it is necessary to make investments that stimulate productivity growth and efficiency along the agri-food chain. At the same time, in order to increase tomato production, financial support is needed for the expansion of tomato cultivation in protected spaces (greenhouses and solariums).*

Keywords: Romania, tomatoes, areas, production, import, export.

Introduction

Tomatoes come from the mountains of South America and are some of the most consumed fruits worldwide. They can be consumed fresh and/or processed depending on the intended use. Fresh tomatoes are classified into large, medium and cherry tomatoes according to fruit size and are sold both individually and in bunches (Soare et al. 2017; Chira et al. 2024; Shimazu & Motoki, 2022).

According to data provided by FAOSTAT in 2019, China (62,764,671 t), India (19,007,000 t) and Turkey (12,841,990 t) were in the top 3 places in terms of tomato production, while Japan (714,600 t) ranks 27th worldwide (Shimazu & Motoki, 2022).

Tomato production is of great economic and social importance for many states, producers and all other regions/municipalities participating in the consumer market, because tomatoes show large market price changes. This feature of the tomato market can expose producers to price risks and uncertainties (Carvalho et al. 2014).

All supply chain actors in the vegetable sector must adapt to changes in the strategic environment, for example the dynamics of the vegetable market and climate change. At the same

time, the actors involved in the supply chain must be able to determine and manage the risks that appear with the changes in the strategic environment (Perdana et al. 2017; Giucă, 2023).

Considering this context, the aim of the paper is to present an overview of the tomato products market in Romania, starting from the analysis of technical indicators (areas and productions) and continuing with the analysis of international trade.

The underlying question is the following: "What are the trends in the tomato market in Romania?", the answer to this question being analyzed in depth in the results and discussions section.

Literature review

Based on the data from the specialized literature, four research hypotheses were formulated. Thus:

- ✓ First research hypothesis: National tomato production cannot cover the consumption needs of the Romanian population.
- ✓ Second research hypothesis: Romania has a trade balance deficit for the category of horticultural products - tomatoes.
- ✓ Third research hypothesis: The financial support granted under the De Minimis Aid program for tomatoes in protected areas is not sufficient for the development of the market for this product.
- ✓ Fourth research hypothesis: For the sustainable development of the tomato market in Romania, investments in tomato processing are needed, thus adding added value to the products.

The literature review indicated that a majority of empirical studies that analyze a country's export competitiveness in a target market are conducted by focusing on supply, analyzing only the group of competing countries. With this context in mind, in this subchapter we have chosen to present a review of studies that analyze the tomato market in several countries.

According to Abdulrahman et al. 2025, Nigeria is the 16th largest tomato producer in the world with a very high potential to dominate world tomato exports. However, Nigeria faces challenges such as: lack of inputs, low yields, outdated technology, significant post-harvest losses and lack of infrastructure for processing.

One of the studies identified in the specialized literature shows that more than 4 million tons of tomatoes are produced in Spain for the fresh market and industry. The southern area of Spain produces an important part of the national tomato production, generating over 200 million plants in 2014. Also, approx. 39 seed companies operate in Spain, offering 400 tomato varieties on the market (Janssen et al. 2016).

Regarding foreign trade in tomatoes, studies show that before the global economic and financial crisis, Spain enjoyed a positive structural effect of exports, which significantly contributed to the increase in tomato exports to the European Union. However, a change with negative effects on the volume of exports to the EU-28 was observed, mainly due to the negative effect of the competitiveness component. Since 2010, Spain has registered a positive change in the volume of its tomato exports to the EU-28, the competitive component being positive (Capobianco Uriarte et al. 2017).

Another study identified in the specialized literature presents the situation of the tomato market in Croatia, a country that does not produce enough vegetables for the consumption needs of its population, thus resorting to imported products. Despite the favorable pedoclimatic conditions for the cultivation of a variety of vegetable species, the production of vegetables does not satisfy the consumption needs of the population, being insufficient and uncompetitive

compared to imported vegetables. Considering this situation, it is appreciated that the export of fresh and processed vegetables is low both in terms of quantity and value. The authors believe that inadequate production is one of the negative effects of fragmented areas, unregulated production infrastructure, lack of heating and irrigation systems, and inadequate storage facilities. Statistics show that in Croatia vegetable products are produced on approximately 40,116 ha, representing 4.7% of the used agricultural area. Regarding tomato production, it follows negative trends in vegetable production. At the level of the last decade, tomato production showed great variations and amounted to an average of 30,355 tons on 575 ha. In 2013, tomato exports represented less than 5% of imported quantities (Lončarić et al, 2018).

Romania, with its 46,815 ha cultivated with tomatoes, holds about 17.5% of the total cultivated area in the EU, but the level of production achieved is only 4.03% of the total tomato production recorded at the union level (Bodnărescu, 2019).

Methodology

The paper is based on data provided by the National Institute of Statistics and TRADEMAP, from which data on the import and export of tomatoes in Romania from the last five years, respectively from the period 2019-2023, were extracted, with a focus on the main partner countries and the country's trade balance.

The research method used in the elaboration of the study is represented by empirical research and quantitative research, focused on the collection, processing and analysis of the specific indicators of the tomato market in Romania.

Among the indicators analyzed are: the area cultivated with tomatoes, the production of tomatoes, the quantity, value and unit value of exports, the value and unit value of imports and the trade balance of the countries for the product category - tomatoes.

Results and discussions

Tomatoes are one of the most widely grown horticultural crops in Romania. This is due to the fact that tomatoes play an important role in the food industry. However, the area, production, import and export are influenced by a series of ecological, economic and technological factors, which are further analyzed in this section.

1. Tomato area and production

In the period 2019-2023, the area cultivated with tomatoes at national level was on average 35,440 hectares, registering variations between 33,631 hectares in 2022 and 40,845 hectares in 2019. In Giurgiu County, the area varied between 865 hectares in 2020 and 1,081 hectares in 2019, recording an average of the period equal to 997 hectares (Table no. 1).

Table no. 1. The area cultivated with tomatoes in the period 2019-2023 (hectares)

Specification	2019	2020	2021	2022	2023
Romania	40,845	34,115	34,747	33,631	33,862
Giurgiu	1,081	865	1,065	948	1,024
% of Romania's area	2.65	2.54	3.07	2.82	3.02

Source: INS data processing, TEMPO ONLINE, accessed on 13.01.2025.

From table no. 1 it was found that the area cultivated with tomatoes in Giurgiu country represented approx. 3.02% of the area cultivated in Romania in 2023.

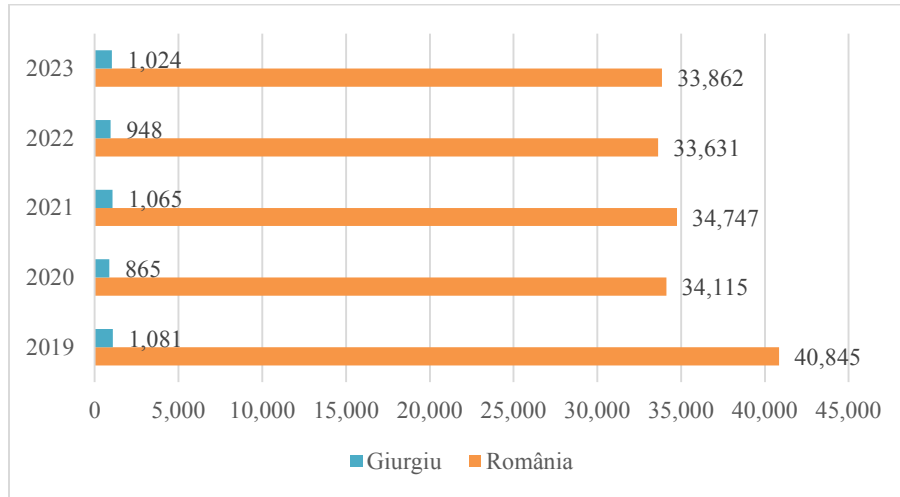


Chart no. 1. Dynamics of the area cultivated with tomatoes in the period 2019-2023 (hectares)

Source: INS data processing, TEMPO ONLINE, accessed on 13.01.2025.

In the year 2023 (33,862 hectares), a decrease in the area cultivated with tomatoes was observed by approx. 17% compared to 2019 (40,845 hectares). At the level of Giurgiu country, a decrease in the area cultivated with tomatoes was observed by approx. 5%, from 1,081 hectares in 2019 to 1,024 hectares in 2023 (Chart no. 1).

Table no. 2. Tomato production in the period 2019-2023 (tons)

Specification	2019	2020	2021	2022	2023
Romania	689,401	745,682	753,377	509,455	474,182
Giurgiu	27,080	23,546	27,378	19,061	20,272
% of Romania's area	3.93	3.16	3.63	3.74	4.28

Source: INS data processing, TEMPO ONLINE, accessed on 13.01.2025.

Regarding tomato production, Romania showed variations ranging from 474,182 tons in 2023 to 753,377 tons in 2021, recording an average for the period of 634,419 tons. At the level of Giurgiu country, production ranged from 19,061 tons in 2022 to 27,378 tons in 2021. At the level of 2023, production reached 20,272 tons, representing 4.28% of the value of national production achieved this year, respectively 4.28% (Table no. 2).

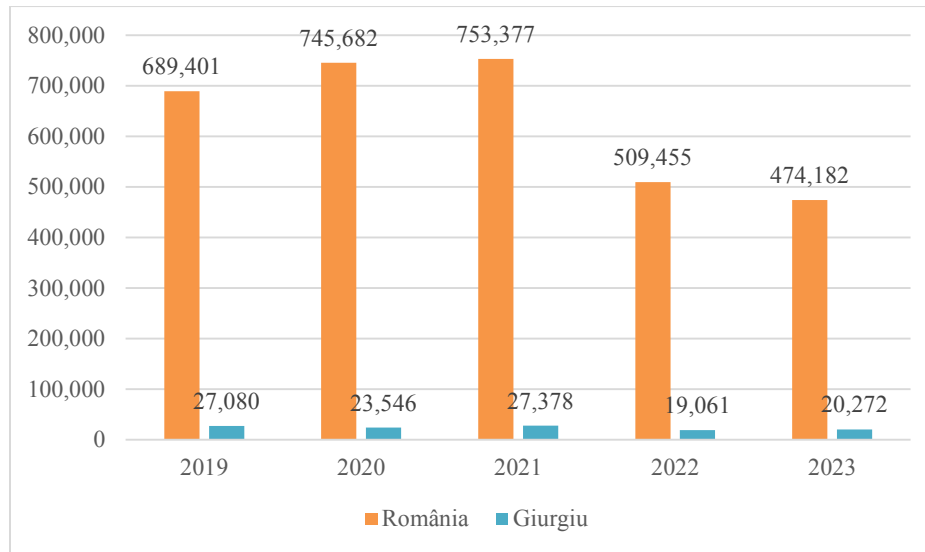


Chart no. 2. Dynamics of tomato production in the period 2019-2023 (tons)

Source: INS data processing, TEMPO ONLINE, accessed on 13.01.2025.

The dynamics of tomato production at the national level was a downward one, during the period 2019-2023 a decrease of 31% was observed, from 689,401 tons in 2019 to 474,182 tons in 2023. Regarding tomato production at county level Giurgiu, a tendency to reduce it was also observed (reduction of approx. 25%), by 27,080 tons in 2019 to 20,272 tons in 2023 (Chart no. 2).

The decrease in tomato production can be attributed to poorly developed agricultural technology, as well as extreme weather phenomena such as the pedological drought in the period 2019-2021, which mainly affected producers who grow tomatoes in the field.

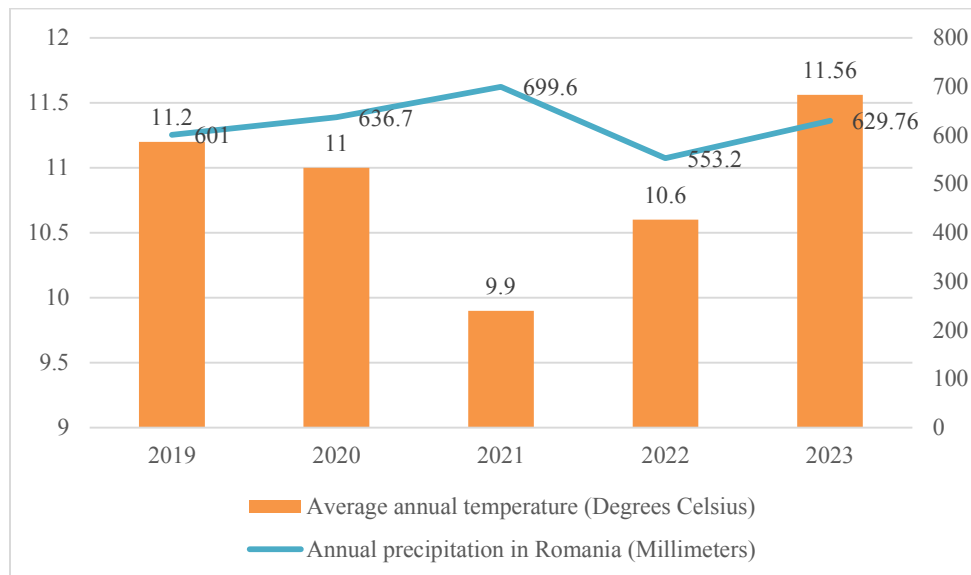


Chart no. 3. Dynamics of the average annual temperature and annual precipitation in Romania during the period 2019-2023

Source: INS data processing, TEMPO ONLINE, accessed on 27.01.2025.

The average annual temperature in the period 2019-2023 varied between 9.9 Degrees Celsius in 2021 and 11.56 Degrees Celsius in 2023. An increase of approx. 3% was observed during the analyzed period. If we refer to the annual amount of precipitation, it varied between 553.2 millimeters in 2022 and 636.7 millimeters in 2020, showing an increase of approximately 5% during the analyzed time interval (Chart no. 3).

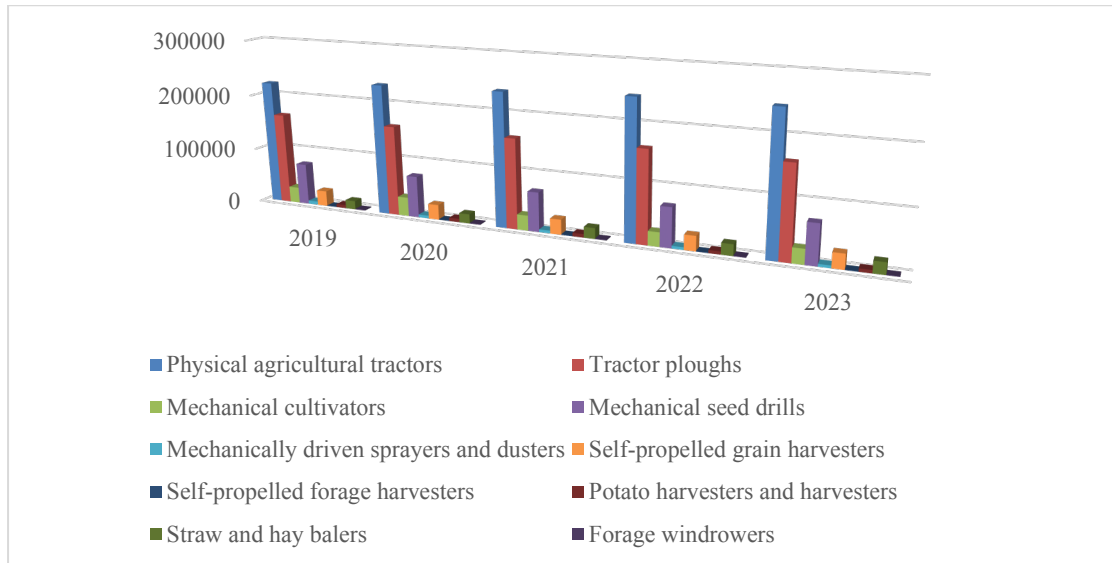


Chart no. 4. Dynamics of the number of tractors and main agricultural machinery in agriculture in Romania during 2019-2023

Source: INS data processing, TEMPO ONLINE, accessed on 27.01.2025.

If we refer to the fleet of tractors and agricultural machinery, agricultural tractors are the most popular among Romanian farmers, ranging between 221,677 in 2019 and 245,348 in 2023, followed by tractor plows, which ranged between 159,266 in 2021 and 163,547 in 2019. During the period 2019-2023, a significant increase of 33% was observed in the number of straw and hay balers, from 15,483 in 2019 to 20,569 in 2023. Also, a significant increase of 15% was observed in self-propelled combines for harvesting fodder, from 1,018 in 2019 to 1,172 in 2023 (Chart no. 4).

At the same time, the growing demand for small-sized tomato varieties (cherry type) has led producers to focus on cultivating these tomato varieties, with a lower volume but a much higher added value, thus reducing the areas and productions

Romania supports the vegetable sector by granting financial aid (direct payments, European funds) to make investments in it. The payments granted apply to those that are considered important from an economic, social and environmental point of view, and which are affected by certain difficulties. Tomatoes were also found among the vegetables for which financial aid was granted. However, the investments were not sufficient to ensure the domestic need for fresh vegetables, Romania being dependent on imports from countries such as Turkey, the Netherlands or Italy. The main solution to reduce dependence on imported vegetables is to increase the area cultivated with vegetables in protected areas, which would allow cultivation during the off-season (Marin & Berevoianu, 2021).

To stimulate the growth of domestic tomato production, the government approved the program to support tomato production in protected areas. According to the provisions of art. 3 paragraph (1) from Decision no. 846 of September 14, 2023, regarding the approval of the Program

to support the production of vegetables grown in protected areas for the period 2023-2024, the de minimis aid constitutes "a support granted to an agricultural holding whose cumulative value over the course of three financial years, the financial year in question and two previous financial years, does not exceed the equivalent in lei of the sum of 20,000 euros".

For the year 2023, the financial resources needed to apply the minimis aid scheme were 262,999,000 lei, the equivalent of 53.142 million euros, and were provided from the MADR budget for the year 2023 (Prevendea, 2022).

According to a press release from MADR, the counties that had the most beneficiaries of the Tomato Program registered are: Olt, Galați, Giurgiu, Dolj, Buzău and Teleorman (Informatia de Giurgiu, 2020).

Table no. 3. Centralized situation of de minimis aid (number of beneficiaries and amount of support) granted to tomato producers in Giurgiu County during 2019-2023

2019		2020		2021*		2022		2023	
Total annual value	No. beneficiary	Total annual value	No. beneficiary	Total annual value	No. beneficiary	Total annual value	No. beneficiary	Total annual value	No. beneficiary
3,000 euro/1,000mp	2,048	3,000 euro/1,000mp	1,408	-	-	3,000 euro/1,000 mp	1,580	3,000 euro/1,000mp	1,871

*at the level of 2021, the tomato program took place through APIA Giurgiu
Source: official data provided by DAJ Giurgiu.

As part of the tomato program - de minimis aid for vegetables in protected areas, a subsidy was granted to producers who have a minimum area of 1,000 m2 in a greenhouse or greenhouse that they dedicate exclusively to growing tomatoes. Official data provided by the Giurgiu County Agricultural Directorate, showed a fluctuating trend in the number of beneficiaries of the support in the period 2019-2023. The maximum number of beneficiaries was reached in 2019, namely 2,048 beneficiaries, and the minimum was recorded in 2020, 1,408 beneficiaries. In 2023, the number of beneficiaries was 1,871, showing a reduction of approx. 9% of them, compared to 2019 (Table no. 3).

2. Tomato export

Romania exported an average of 3,747 tons of tomatoes in the period 2019-2023, showing a 125% increase in the amount of exports, from 1,664 tons in 2019 to 3,747 tons in 2023. The largest importer of tomatoes in Romania was Poland (1,580 tons in 2023), followed by the Republic of Moldova, Hungary, Ukraine and Belgium (Table no. 4).

Table no. 4. Dynamics of tomato export quantity in the period 2019-2023 (top 5 importing countries) – tons

Importers	2019	2020	2021	2022	2023	2023/2019
World	1,664	1,741	1,186	3,142	3,747	125%
Poland	361	405	555	680	1,580	338%
Moldova, Republic of	808	1.002	256	901	652	-19%
Hungary	29	20	33	415	500	1,624%
Ukraine	-	-	-	750	278	-
Belgium	0	15	56	117	185	-

Source: TRADE MAP data processing, accessed on 13.01.2025.

Regarding the value of tomato exports, this was on average 2,406 thousand euros in the period 2019-2023. In this period of time, an increase was highlighted (+237%), from 1,509 thousand euros in 2019 to 5,080 thousand euros in 2023. Poland recorded the highest export value in 2023, respectively 2,468 thousand euro, being followed by Hungary, the Republic of Moldova, Ukraine and Belgium (Table no. 5).

**Table no. 5. Dynamics of tomato export value in the period 2019-2023
(top 5 importing countries) - thousands of euros**

Importers	2019	2020	2021	2022	2023	2023/2019
World	1,509	1,398	1,055	2,989	5,080	237%
Poland	360	391	476	916	2,468	586%
Hungary	30	21	28	582	777	2,490%
Moldova, Republic of	607	689	222	445	553	-9%
Ukraine	0	0	-	548	347	-
Belgium	0	14	63	155	309	-

Source: TRADE MAP data processing, accessed on 13.01.2025.

If we refer to the unit value of the tomato export, it can be seen from the table below (Table no. 6), the dynamics of the unit value of the export that varied between 803 euros/ton in 2020 and 1,356 euros/ton in 2023, registering an average of the period of 981 euros/ton. During the analyzed period, an increase of approximately 50% was registered. Poland recorded the highest unit value (1,562 euros/ton in 2023), followed by Hungary, the Republic of Moldova, Ukraine and Belgium.

**Table no. 6. Dynamics of the unit value of tomato exports in the period 2019-2023
(top 5 importing countries) – euro/ton**

Importers	2019	2020	2021	2022	2023	2023/2019
World	907	803	890	951	1.356	50%
Poland	997	965	857	1.347	1.562	57%
Hungary	1.047	1.051	845	1.402	1.553	48%
Moldova, Republic of	751	687	868	494	848	13%
Ukraine	-	-	-	731	1.247	-
Belgium	-	935	1.132	1.323	1.669	-

Source: TRADE MAP data processing, accessed on 13.01.2025.

The markets with the greatest potential for Romanian tomato exports are Germany, France and Bulgaria. Romania has close export ties with the Republic of Moldova. However, France is the market with the greatest demand potential for tomatoes produced in Romania (Figure no. 1).

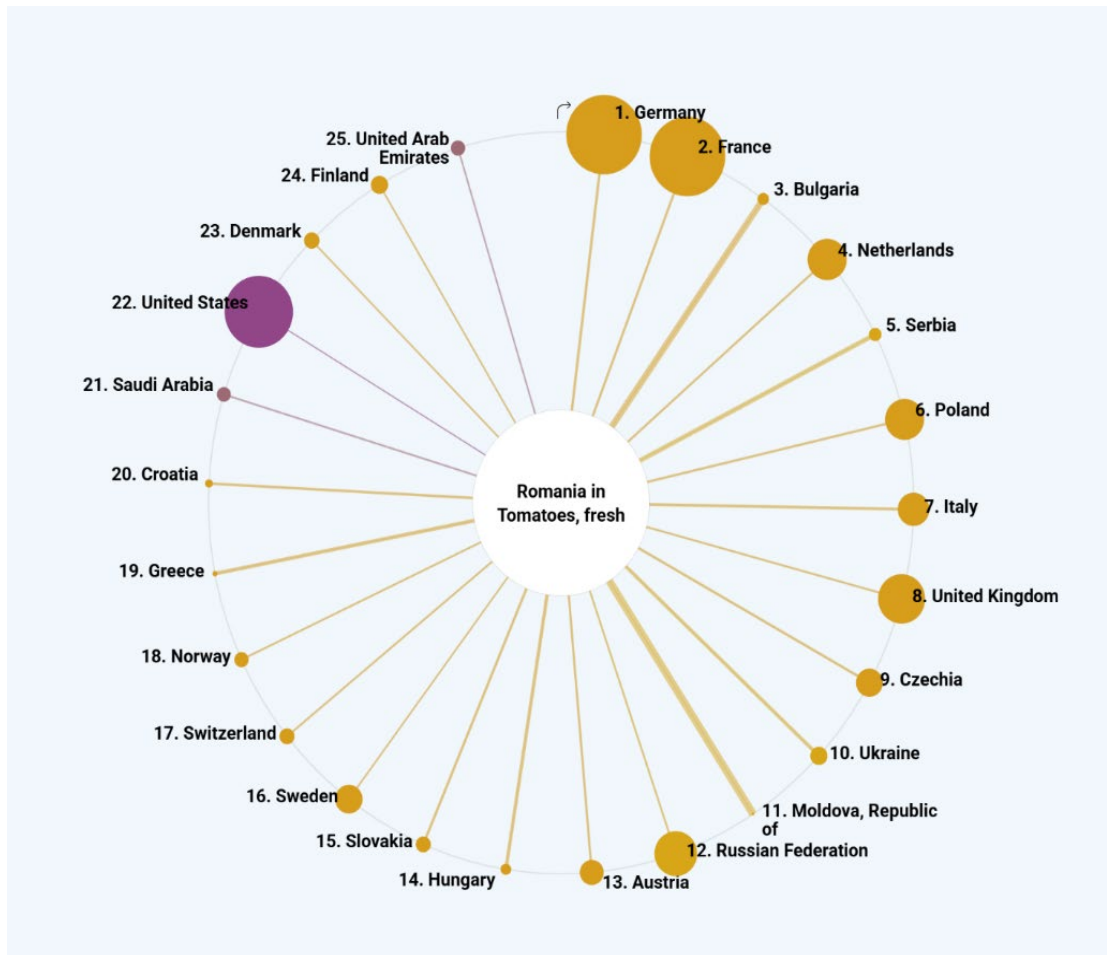


Figure no. 1. Ranking of Romania's export potential for the tomato product

Source: INTRACEN, TRADE MAPS, accessed on 13.01.2025.

3. Tomato import

Regarding the import of tomatoes, Romania imported an average of 88,300 tons in the period 2019-2023. During this period, a 14% increase in the imported quantity was observed, from 81,390 tons in 2019 to 92,990 tons in 2023. Turkey stood out as the largest exporter of tomatoes in Romania, with 66,838 tons in 2023, being followed by Germany, the Netherlands, Spain and Italy (Table no. 7).

Table no. 7. The dynamics of the quantity of tomato imports in the period 2019-2023 (top 5 exporting countries) – tons

Exporters	2019	2020	2021	2022	2023	2023/2019
World	81.390	90.736	92.561	83.823	92.990	14%
Türkiye	37.478	54.469	58.464	52.914	66.838	78%
Germany	8.027	8.517	11.293	9.223	10.806	34%
Netherlands	7.642	8.004	5.495	7.858	3.369	-55%
Spain	10.047	6.584	7.075	6.751	3.298	-67%
Italy	7.319	3.086	3.402	1.214	2.600	-64%

Source: TRADE MAP data processing, accessed on 13.01.2025.

Regarding the value of tomato imports, in the period 2019-2023 this was on average 118,558 thousand euros, showing oscillations between 95,401 thousand euros in 2019 and 155,170 thousand euros in 2023. The dynamics of the value of tomato imports was an upward one, at the level of the period, an increase of 63% being highlighted. At the level of 2023, Turkey registered the highest value of tomato import, namely 92,041 thousand euros, followed by Germany, the Netherlands, Spain and Italy (Table no. 8).

**Table no. 8. Dynamics of the value of tomato imports in the period 2019-2023
(top 5 exporting countries) - thousands of euros**

Exporters	2019	2020	2021	2022	2023	2023/2019
World	95.401	98.750	113.749	129.722	155.170	63%
Türkiye	36.066	48.624	53.223	66.137	92.041	155%
Germany	14.428	14.961	18.644	20.488	27.747	92%
Netherlands	12.671	12.598	15.697	16.198	11.605	-8%
Spain	12.975	9.914	12.770	14.215	8.626	-34%
Italy	8.012	3.359	4.768	2.960	5.947	-26%

Source: TRADE MAP data processing, accessed on 13.01.2025.

In the 2019-2023 period, the unit value of tomato imports varied between 1,088 euros/ton in 2020 and 1,669 euros/ton in 2023, registering an average of 1,341 euros/ton for the period. The dynamics of the unit value of the import was an upward one, in the analyzed time interval showing a 42% increase, from 1,172 euros/ton in 2019 to 1,669 euros/ton in 2023. Analyzing the unit value by importing countries, observed that the highest unit value is held by Turkey (1,377 euros/tonne), followed by Germany, Holland, Spain and Italy (Table no. 9).

**Table no. 9. Dynamics of the unit value of tomato imports in the period 2019-2023
(top 5 exporting countries) – euro/ton**

Exporters	2019	2020	2021	2022	2023	2023/2019
World	1.172	1.088	1.229	1.548	1.669	42%
Türkiye	962	893	910	1.250	1.377	43%
Germany	1.797	1.757	1.651	2.221	2.568	43%
Netherlands	1.658	1.574	2.857	2.061	3.445	108%
Spain	1.291	1.506	1.805	2.106	2.616	103%
Italy	1.095	1.089	1.401	2.438	2.287	109%

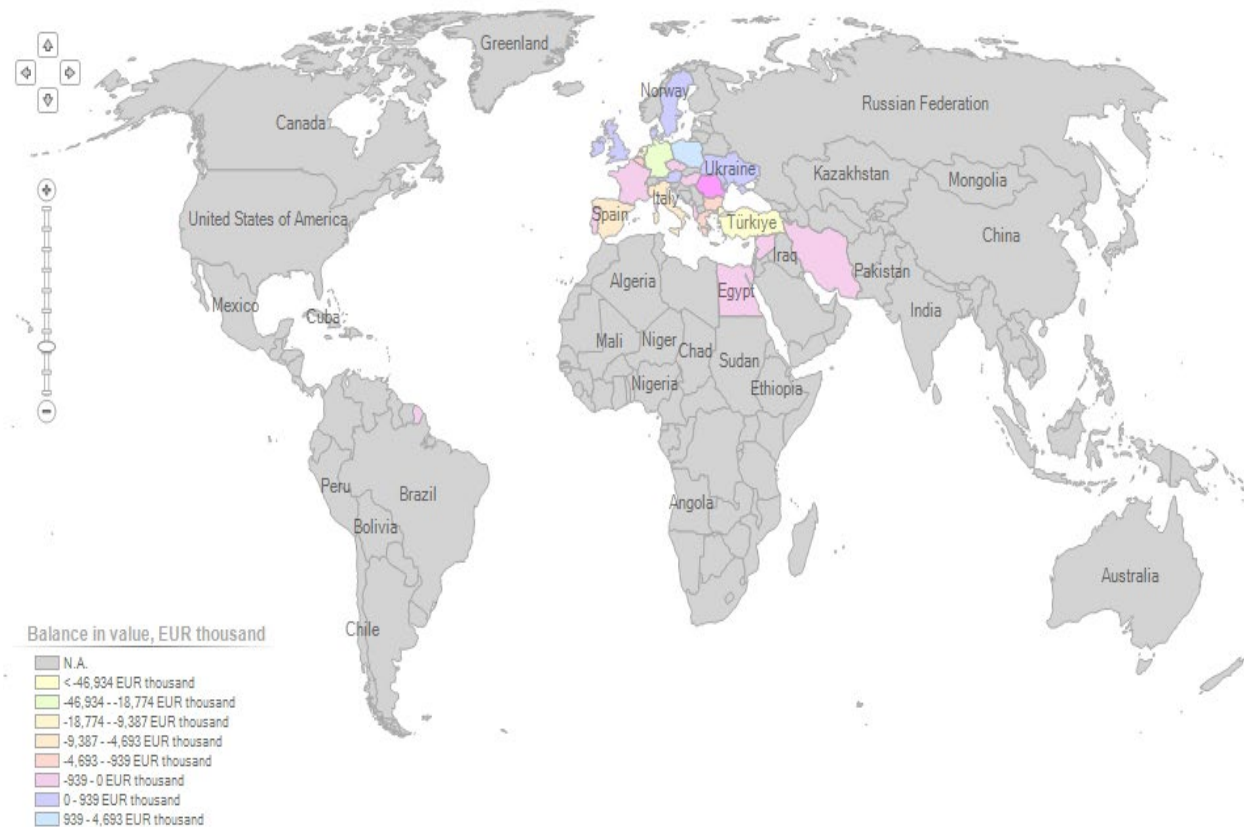
Source: TRADE MAP data processing, accessed on 13.01.2025.

4. Trade balance

Regarding Romania's trade balance for the product - tomatoes, a deficit of the trade balance was observed at the level of the last 5 years, reaching -150,090 thousand euros in 2023, from -93,892 thousand euros in 2019, highlighting an increase in the deficit of 60% (Figure no. 2).

List of partners markets for a product commercialized by Romania in 2023

Product : 0702 Tomatoes, fresh or chilled



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Figure no. 2. Trade balance – partner markets for the tomato product sold by Romania in 2023

Source: INTRACEN, TRADE MAPS, accessed on 13.01.2025.

Conclusion

An average of 634,419 tons of tomatoes are produced in Romania each year, on an average area of 35,440 hectares. Both the area and production recorded for tomato cultivation have shown downward trends in the period 2019-2023. These trends were also observed in Giurgiu County, where the dynamics of area and production showed decreases in the analyzed period, although more than 1,500 producers benefited from the tomato subsidy intended to support the increase in tomato production in protected areas at the national level. These decreases represent one of the negative effects generated by climate change, which has become increasingly pronounced in recent years, but also by poorly developed technology.

A large part of the national tomato production is consumed/processed in the country, with exports being insignificant, 2,296 tons on average, while imports average 88,300 tons, equivalent to 19% of domestic tomato production. Despite the government program Ajutor de Minimis - Tomato Program, which was launched in 2017, tomato imports have not registered a significant reduction, on the contrary, the imported quantities have increased from year to year, reaching 92,990 tons in 2023, an increase of 14% compared to the quantity registered in 2019, respectively 81,390 tons.

In 2023, more than half of the imported quantity of tomatoes came from Turkey, namely 66,838 tons (59% of the total quantity imported in 2023), recording a maximum in the quantity of tomatoes imported from Turkey. Romania has thus become the largest importer of tomatoes from Turkey, the unit value of imported tomatoes being 1,377 euros/ton, an increase of 43% compared to the unit value recorded in 2019, respectively 962 euros/ton. Regarding the trade balance with tomatoes, following the statistical analysis of international trade, a trade deficit is recorded in this category of products.

Given these data, it is necessary for strategic and political factors to set clear objectives regarding the development of the vegetable sector. This can be achieved by supporting investments in the processing, infrastructure and storage sectors. Investments in the development of the processing capacity of agricultural raw materials are particularly important and aim to increase the added value of these product categories.

The Strategic Plan for the Common Agricultural Policy 2023-2027 through intervention DR-11 – Investments in the conditioning, storage and processing of agricultural and fruit products finances up to 7,000,000 euros/start-up project and up to 3,000,000 euros/project for investments in the modernization of processing units.

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