

## TRENDS ON THE TOMATO MARKET IN ROMANIA IN THE PERIOD 2010-2021

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### Abstract

*The study presents the main trends in the Romanian tomato market in the last decade. In order to identify trends in the tomato market, national and regional studies were carried out and a number of indicators were analyzed, including cultivated area, tomato production, average yield per hectare, base price, tomato consumption, but also the foreign trade of tomatoes (export and import). The processing methods included: descriptive statistics regarding mean, standard deviation, coefficient of variation and annual growth rate. Although the area cultivated with tomatoes decreased by approximately 30%, the average production per hectare reached 21,681 kg/ha in 2021, an increase of 40%. However, Romania's tomato market currently has a significant deficit in the trade balance (approximately 112,694 thousand euros in 2021). For this reason, it is necessary to stimulate productivity growth and increase efficiency along the chain of agri-food products by investing in modern agricultural exploitation.*

**Key words:** marketing, agriculture, tomatoes, trade, Romania

### INTRODUCTION

An important characteristic of tomatoes is related to the fact that they can be consumed in a variety of forms, both fresh and processed into various products such as juices, sauces, ketchup, paste chicken, and in dry form, which makes them the second most important vegetable product in the world [8].

In 2019, the world tomato production was approx. 197 million tons, of which 75% was destined for the fresh market and 25% for processing [3].

The tomato processing industry is one of the most important sectors of the agro-food industry. Annually, over 40 million tons of tomatoes are processed globally [2].

Considered sometimes a "vegetable", sometimes a "fruit", tomatoes appeal not only for their red or yellow color, but also for their different sizes and shapes, but above all for their sweet taste and juicy content. In terms of chemical composition, tomatoes contain 80% water, 2% protein, 3% sugar, minerals, vitamins, citric, malic, and pectic acids, oxalates [7, 14, 19].

It is scientifically proven that 100 g of tomato provides 33% of an adult's vitamin C

requirement, 8% of vitamin B1, 5% of folic acid, 13% of vitamin A and 16-20 calories, although their nutritional value varies depending on the technology used, climatic factors and storage conditions. Eating tomatoes also strengthens the body's defenses against infections, regulates digestive function, regulates the cardiovascular system, and revitalizes the skin and eyesight [11,12,13].

Tomatoes originate from Central America. They began to be cultivated in Europe starting from the 16th century, and in Romania, tomatoes were cultivated from the 19th century in small areas, and with the demographic growth, the areas cultivated with tomatoes also increased. These are one of the most representative vegetable species cultivated in Romania [16, 18].

Tomatoes are of particular importance for the food industry, as an intensification of the factors of land use and labor resources, fodder, export, and last but not least as a source of profit. Understanding the functioning mechanism of the market, namely the relationship between the demand and supply of a product, we can say that the relationship between the buying and selling

market is an essential and specific element [9]. It must be remembered that with tomatoes there is a need to increase the strengthens the body's defences against infections, regulates digestive function, regulates the cardiovascular system, and revitalizes the product's perishable natureransit speed (in the market), due to the perishable nature of the product. In the long term, tomato breeding programs have focused on crop yield, shape, and shelf life. However, over the past 30 years, tomato producers have pursued the development of superior-quality tomatoes to meet consumer demands for fresh vegetables with a pleasing visual appearance, and higher organoleptic and nutritional characteristics [1, 3, 6].

According to the Fideicomisos Instituidos en Relación con la Agricultura report, "the volume of world tomato exports has grown at an average annual rate of 5.19% since 2007. In 2016, tomatoes were the most traded vegetable worldwide, accounting for 20.86% of the total export volume of fresh vegetables according to United Nations data".

According to FAOSTAT estimates, "tomatoes are also the most cultivated vegetable in the world, with a historical peak reached in 2016 (177.04 thousand tons) in a total harvested area of 4.78 thousand ha and with a yield of 37.02 t/ha. More than half of the world's tomato production (56.71%) is concentrated in four countries. China is the world's largest producer of tomatoes (31.81%), with almost a third of world production, followed by India (10.39%), USA (7.36%) and Turkey (7.12%)".

"Regional trade agreements (NAFTA and EU28), where tomatoes are currently traded on a large scale, remain unstable between member states, generating an uncertain trade situation on both sides of the Atlantic; Brexit will result in the loss of the UK's free trade status with other EU states and tariffs will increase the cost of exports and also the cost of imports by a third. Import prices will also rise in the UK, where more than a third of imports come from the EU and the UK is the EU's the third largest tomato market. The threat of the US withdrawing from NAFTA and declaring trade war against China and the

EU28 have increased uncertainty in international trade" [4].

In Romania, the tomato market, like the agricultural market as a whole, is in a difficult situation, the foreign trade in tomatoes is characterized by a significant deficit in the trade balance, which requires a series of government measures to reduce this deficit [5].

To increase productivity and economic efficiency in the production chain, it is necessary to expand the cultivation of tomatoes in protected spaces, like greenhouses, which can be achieved by investing in modern farms with new cultivation technologies. Tomato producers should combine their capital and efforts in the form of cooperatives, such as agricultural cooperatives, to obtain cheaper agricultural inputs, apply modern technologies, and have a greater openness to the market [15].

The financial resources required for the application of the de minimis aid scheme amount to 187,500 thousand lei (the equivalent of 39,477 thousand EUR) and are provided from the 2020 budget. The value of the de minimis aid is a maximum of 3,000 EUR/beneficiary/year. The system is addressed to agricultural producers who are natural persons with producer certificates, authorized natural persons established pursuant to GEO no. 44/2008, individual businesses, family businesses, and legal entities.

Research on *Solanum lycopersicum* L. shows that tomatoes are perishable products and therefore prices fluctuate according to supply and demand. It is necessary to forecast tomato prices during the harvest season so that producers can make informed production decisions [17].

In this context, the purpose of the paper was to analyze the main trends in the Romanian tomato market in the last decade, in terms of cultivated area, average yield, basic price, consumption, but also foreign trade (export and import) using the available statistical data for the period 2010-2021.

## MATERIALS AND METHODS

This research is based on statistical data provided by the National Institute of Statistics (INS), as well as the data series provided by the International Trade Center (INTRACEN) regarding tomato trade (trade balance) in the period 2010-2021.

The research methods applied in developing the research were systematic and creative analysis as well as the complex approach to the theme regarding the "tomato trade" by researching the studies carried out by different researchers in the agricultural field.

Statistical indicators such as:

**Arithmetic means**, calculated as the ratio between the sum of the values of the data series and the number of years considered.

$$m = \frac{x_1 + x_2 + \dots + x_n}{n} \dots\dots\dots(1)$$

**The standard deviation** indicates how much the values are dispersed from the mean.

$$\partial = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}} \dots\dots\dots(2)$$

where:

$\partial$  = standard deviation;

$x_i$  = values of the data series over a number of years;

$n$  = number of years considered.

**Coefficient of variation:**

$$C = \frac{\partial}{\bar{x}} * 100 \dots\dots\dots(3)$$

It can take values between 0 and 100%. Between 0-10% attests to a greater degree of homogeneity of the series, between 10-20% - medium variation; over 20% - high variation.

**Annual growth rate**, this shows the annual growth of the analyzed phenomenon:

$$r = \sqrt[n-1]{\prod \left( \frac{p_n}{p_{n-1}} \right)} - 1 \dots\dots\dots(4)$$

where:

$r$  = average annual growth rate,

$\prod p_n/p_{n-1}$  = indicators of chain growth.

## RESULTS AND DISCUSSIONS

### Cultivated area with tomatoes

The areas cultivated with tomatoes at the level of development regions in the period 2010-2021 showed a downward trend in Romania, as can be seen in Table 1.

The areas cultivated with tomatoes registered limits between 34.12 thousand ha in 2020 and 51.75 thousand ha in 2011. In 2021, 34.75 thousand ha were recorded, decreasing with about 43% compared to the area registered in 2010, respectively 49.77 thousand ha.

Analyzing the area cultivated with tomatoes at the level of development regions, the South-Muntenia Region (7.49 thousand ha in 2021) and the North-East Region (6.06 thousand ha in 2021) and the South-East Region (5.80 thousand ha in 2021) are the regions that stood out for large cultivated areas.

At the opposite pole, was the Bucharest-Ilfov Region, with only 1.29 thousand tons in 2021. In the same year, the distribution of the cultivated area with tomatoes in the territory reflects that tomatoes are mainly cultivated in North East of the country (6.06 thousand ha), South Muntenia (5.80 thousand ha) and in South West Oltenia (5.21 thousand ha).

The smallest surface is cropped in Bucharest Ilfov region of development and accounted for 1.29 thousand ha.

In the analyzed interval, the highest declined was achieved in South -East region from 9.23 to 5.80 thousand ha ( - 3.43 thousand ha, -37.2 %) and in South -West Oltenia from 10.33 to 5.21 thousand ha ( -5.12 ha, - 49.6%).

As we may notice from the figures, the decrease of the cultivated area with tomatoes was carried out in all the micro regions of development (Table 1).

Following the analysis of the statistical indicators for the area cultivated with tomatoes in the period 2010-2021, the following results were obtained:

-The standard deviation recorded limits between 0.20 thousand ha in the Bucharest-Ilfov Region and 1.96 in the South-West-Oltenia Region, in total the standard deviation recorded 5.77 thousand ha.

-The coefficient of variation on the surface with tomatoes varied between 7.53% in the

North-West Region and 26.71% in the South-West-Oltenia Region.

-The annual growth rate showed negative values for all development regions of the

country, between -0.69% in the Bucharest-Ilfov Region and -6.04 in the South-West-Oltenia Region (Table 2).

Table 1. The area cultivated with tomatoes by development regions in the period 2010-2021 (thousands of hectares)

Development regions	Years											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	UM: thousands of hectares											
North-West	4.15	3.30	3.43	3.83	3.66	3.60	3.69	3.58	3.62	3.50	3.15	3.26
Center	2.60	2.58	2.58	3.33	2.84	3.32	3.01	2.89	3.00	3.04	2.20	2.10
North-East	7.52	8.04	7.74	7.74	6.98	6.96	6.57	6.46	6.82	6.64	4.70	6.06
South-East	9.23	9.91	8.72	8.57	7.27	7.27	7.23	6.87	6.91	6.77	6.95	5.80
South Muntenia	9.65	10.98	10.41	9.96	9.44	9.47	8.26	8.13	8.21	8.98	7.17	7.49
Bucharest Ilfov	1.39	1.85	1.72	1.78	1.57	1.57	1.45	1.41	1.43	1.41	1.22	1.29
South-West Oltenia	10.33	10.01	10.20	8.18	7.42	7.40	6.14	6.12	6.16	5.98	4.80	5.21
West	4.92	5.08	4.87	4.99	4.68	4.66	4.65	4.58	4.60	4.53	3.93	3.53
<b>TOTAL</b>	<b>49.77</b>	<b>51.75</b>	<b>49.66</b>	<b>48.37</b>	<b>43.86</b>	<b>44.26</b>	<b>41.00</b>	<b>40.04</b>	<b>40.74</b>	<b>40.85</b>	<b>34.12</b>	<b>34.75</b>

Source: INS data processing - TEMPO Online - AGR108A - The area cultivated with the main crops, by ownership forms, macro-regions, development regions, and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

Table 2. Statistical indicators calculated for the area cultivated with tomatoes in the period 2010-2021

Development regions	2021/2010	2021/2020	MIN.	MAX.	AVERAGE	STANDARD DEVIATION	*COEFFICIENT OF VARIATION (%)	ANNUAL GROWTH RATE (%)
North-West	-21.25%	3.49%	3.15	4.15	3.56	0.27	7.53	-2.15
Center	-19.06%	-4.54%	2.10	3.33	2.79	0.39	14.04	-1.90
North-East	-19.34%	29.10%	4.70	8.04	6.85	0.90	13.20	-1.93
South-East	-37.14%	-16.47%	5.80	9.91	7.62	1.20	15.76	-4.13
South Muntenia	-22.33%	4.55%	7.17	10.98	9.01	1.18	13.05	-2.27
Bucharest Ilfov	-7.29%	5.67%	1.22	1.85	1.51	0.20	13.00	-0.69
South-West Oltenia	-49.58%	8.46%	4.80	10.33	7.33	1.96	26.71	-6.04
West	-28.18%	-10.22%	3.53	5.08	4.59	0.44	9.66	-2.96
<b>TOTAL</b>	<b>-30.18%</b>	<b>1.85%</b>	<b>34.12</b>	<b>51.75</b>	<b>43.26</b>	<b>5.77</b>	<b>13.34</b>	<b>-3.21</b>

Source: INS data processing - TEMPO Online - AGR108A - The area cultivated with the main crops, by ownership forms, macro-regions, development regions, and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

### Tomato production

Regarding the total tomato production, the analysis of Table 3 shows that from 2010 to 2021, Romania's tomato production is on a

downward trend, registering values between 627 thousand tons in 2016 and 911 thousand tons in 2011, with an average of 730 thousand tons (Table 3).

At the level of the development regions, the highest total production was recorded in the South-Muntenia Region (158 thousand tons in 2021) and the South-East Region (144

thousand tons in 2021). At the opposite pole, the Bucharest-Ilfov Region ranks, with 28 thousand tons in 2021 (Table 3).

Table 3. Total tomato production by development regions in the period 2010-2021 (thousand tons)

Development regions	Years											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	UM: thousands of tons											
North-West	63	64	49	56	55	52	55	60	59	54	62	56
Center	35	43	35	45	44	47	43	44	48	42	45	40
North-East	105	124	98	111	106	104	88	94	101	94	86	118
South-East	175	210	133	155	150	147	160	147	158	147	176	144
South Muntenia	142	173	134	149	139	141	117	132	155	156	158	158
Bucharest Ilfov	37	55	32	35	29	29	22	21	24	21	24	28
South-West Oltenia	145	166	144	128	121	119	84	101	112	104	108	133
West	67	76	59	70	63	63	59	81	86	71	86	76
<b>TOTAL</b>	<b>769</b>	<b>911</b>	<b>683</b>	<b>749</b>	<b>706</b>	<b>702</b>	<b>627</b>	<b>680</b>	<b>743</b>	<b>689</b>	<b>746</b>	<b>753</b>

Source: INS data processing - TEMPO Online - AGR109A - Vegetable agricultural production for the main crops, by forms of ownership, macro-regions, development regions and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

Table 4. Statistical indicators calculated for total tomato production in the period 2010-2021

Development regions	2021/2010	2021/2020	MIN.	MAX.	AVERAGE	STANDARD DEVIATION	*COEFFICIENT OF VARIATION (%)	ANNUAL GROWTH RATE (%)
North-West	-12.07%	-10.13%	49	64	57	4.55	7.96	-1.16
Center	15.04%	-12.69%	35	48	42	4.22	9.93	1.28
North-East	13.10%	37.55%	86	124	102	11.56	11.30	1.13
South-East	-17.72%	-17.98%	133	210	159	20.40	12.86	-1.76
South Muntenia	11.76%	0.04%	117	173	146	15.01	10.27	1.02
Bucharest Ilfov	-23.82%	16.41%	21	55	30	9.52	32.02	-2.44
South-West Oltenia	-8.77%	22.58%	84	166	122	22.51	18.43	-0.83
West	14.29%	-10.93%	59	86	71	9.85	13.81	1.22
<b>TOTAL</b>	<b>-1.97%</b>	<b>1.03%</b>	<b>627</b>	<b>911</b>	<b>730</b>	<b>69.96</b>	<b>9.59</b>	<b>-0.18</b>

Source: INS data processing - TEMPO Online - AGR109A - Vegetable agricultural production for the main crops, by forms of ownership, macro-regions, development regions and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

From the analysis of the statistical indicators calculated for the total production of tomatoes, in the analyzed period the following results were obtained: the standard deviation registered limits between 4.22 thousand tons in the Central Region and 22.51 thousand tons in the South-West Oltenia Region, and at the

country level, the standard deviation was 69.96 thousand tons.

The coefficient of variation of total tomato production varied between 7.96% in the North-West Region and 32.02% in the Bucharest-Ilfov Region. The annual rate of growth recorded negative values for 4 of the

analyzed regions, respectively North-West (-1.16%), South-East (-1.76%), Bucharest-Ilfov (-2.44%), and South-West Oltenia (-0.83%) (Table 4).

### Tomato yield

Regarding the average production per hectare, an increasing trend was highlighted, with values between 13,761 kg/ha in 2012 and 21,876 kg/ha in 2020, with an average of the period equal to 17,098 kg/ha (Table 5).

Table 5. Average tomato production per hectare by development region in the period 2010-2021 (kg/ha)

Development regions	Ani											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	UM: Kg/ ha											
NORTH-WEST	15,276	19,377	14,406	14,684	15,055	14,455	14,935	16,861	16,304	15,380	19,639	17,059
CENTER	13,294	16,693	13,465	13,545	15,349	14,070	14,192	15,131	15,884	13,977	20,655	18,897
NORTH-EAST	13,914	15,416	12,617	14,284	15,240	14,924	13,326	14,552	14,788	14,089	18,311	19,510
SOUTH-EAST	19,004	21,177	15,251	18,143	20,628	20,193	22,168	21,340	22,924	21,752	25,331	24,872
SOUTH--MUNTENIA	14,669	15,772	12,875	14,990	14,679	14,927	14,201	16,227	18,852	17,370	22,058	21,105
BUCHAREST - ILFOV	26,521	29,739	18,797	19,465	18,240	18,501	15,097	15,121	16,672	15,167	19,789	21,790
SOUTH-WEST OLTENIA	14,090	16,546	14,098	15,629	16,362	16,094	13,655	16,547	18,198	17,452	22,560	25,497
WEST	13,608	15,007	12,022	14,055	13,386	13,465	12,582	17,593	18,780	15,592	21,829	21,657
<b>TOTAL</b>	<b>15,443</b>	<b>17,602</b>	<b>13,761</b>	<b>15,488</b>	<b>16,102</b>	<b>15,857</b>	<b>15,297</b>	<b>16,978</b>	<b>18,235</b>	<b>16,879</b>	<b>21,858</b>	<b>21,681</b>

Source: INS data processing - TEMPO Online - AGR110A - Average production per hectare, for the main crops, by forms of ownership, macro-regions, development regions and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

Table 6. Statistical indicators calculated for the average production per hectare obtained for tomatoes in the period 2010-2021

Development regions	2021/2010	2021/2020	MIN.	MAX.	AVERAGE	STANDARD DEVIATION	*COEFFICIENT OF VARIATION (%)	ANNUAL GROWTH RATE (%)
NORTH-WEST	11.67%	-13.14%	14,406	19,639	16,119	1,810	11.23	1.01
CENTER	42.15%	-8.51%	13,294	20,655	15,429	2,310	14.97	3.25
NORTH-EAST	40.22%	6.55%	12,617	19,510	15,081	1,970	13.07	3.12
SOUTH-EAST	30.88%	-1.81%	15,251	25,331	21,065	2,787	13.23	2.48
SOUTH--MUNTENIA	43.87%	-4.32%	12,875	22,058	16,477	2,842	17.25	3.36
BUCHAREST - ILFOV	-17.84%	10.11%	15,097	29,739	19,575	4,551	23.25	-1.77
SOUTH-WEST OLTENIA	80.96%	13.02%	13,655	25,497	17,227	3,513	20.39	5.54
WEST	59.15%	-0.79%	12,022	21,829	15,798	3,400	21.52	4.31
<b>TOTAL</b>	<b>40.39%</b>	<b>-0.81%</b>	<b>13,761</b>	<b>21,858</b>	<b>17,098</b>	<b>2,477</b>	<b>14.49</b>	<b>3.13</b>

Source: INS data processing - TEMPO Online - AGR110A - Average production per hectare, for the main crops, by forms of ownership, macro-regions, development regions and counties, for the main food and beverage products, Accessed on 15.02.2023 [10].

The analysis of the statistical indicators calculated for the average production per hectare obtained for tomatoes gave the following results for the analyzed period. The

standard deviation showed limits between 1,810 kg/ha in the North-West Region and 4,551 kg/ha in the Bucharest-Ilfov Region, and for the whole country, the standard

deviation was 2,477 kg/ha. The coefficient of variation of the average tomato production per hectare oscillated between 11.23% in the North-West Region and 23.25% in the Bucharest-Ilfov Region. Regarding the annual growth rate, it recorded negative values only in the Bucharest-Ilfov Region (-1.77%), for the other development regions it recorded positive values (Table 6).

#### Average annual tomato consumption per dweller

In Romania, the average annual consumption per dweller increased by about 5.25% in the

period 2010-2020, from 40 kg per inhabitant to 42.1 kg per inhabitant. From the calculation of linear type regression, an increase in average tomato consumption with 0.3182 kg/inhabitant per year has been observed.

The increase in the standard of living of Romanians is reflected in the evolution of the annual consumption of tomatoes per capita. This is highly influenced by the volatility of the price of valorization in tomatoes (Figure 1).

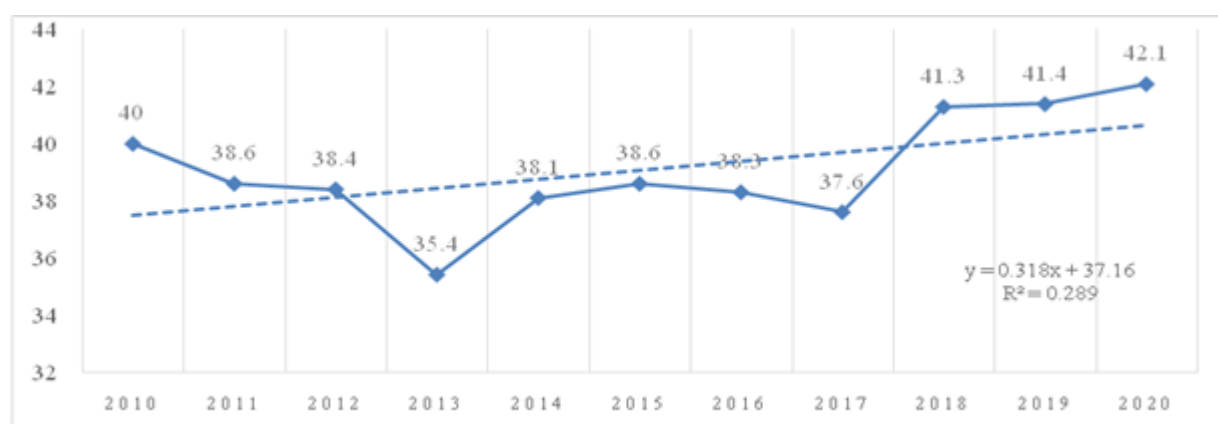


Fig. 1. Evolution of the annual tomato consumption per inhabitant in the period 2010-2020 (kg/inhabitant)  
 Source: INS data processing - TEMPO Online - CLV104A - Annual average consumption per inhabitant, of the main food and beverage products, Accessed on 15.02.2023 [10].

#### Tomatoes basic price

Regarding the basic price of tomatoes, it was increased by about 37% during the analyzed period. Calculating the linear type regression,

it was observed that the basic price of tomatoes has increased by approx. 149 lei/ton per year (Figure 2).



Fig. 2. Evolution of the average basic price of tomatoes in the period 2010-2020 (lei/ton)  
 Source: Data processing Ins - Tempo online - AGR209a - Statistics of unitary values, basic prices, Accessed on 18.10.2022 [10].

#### Tomato export

The analysis of the tomato export showed a descending tendency at the level of the period 2010-2021. From a value point of view, the

export varied between 250 and 2,251 thousand euros, and in terms of its quantity, the variation between 348 and 2,990 tonnes was noted (Figure 3).

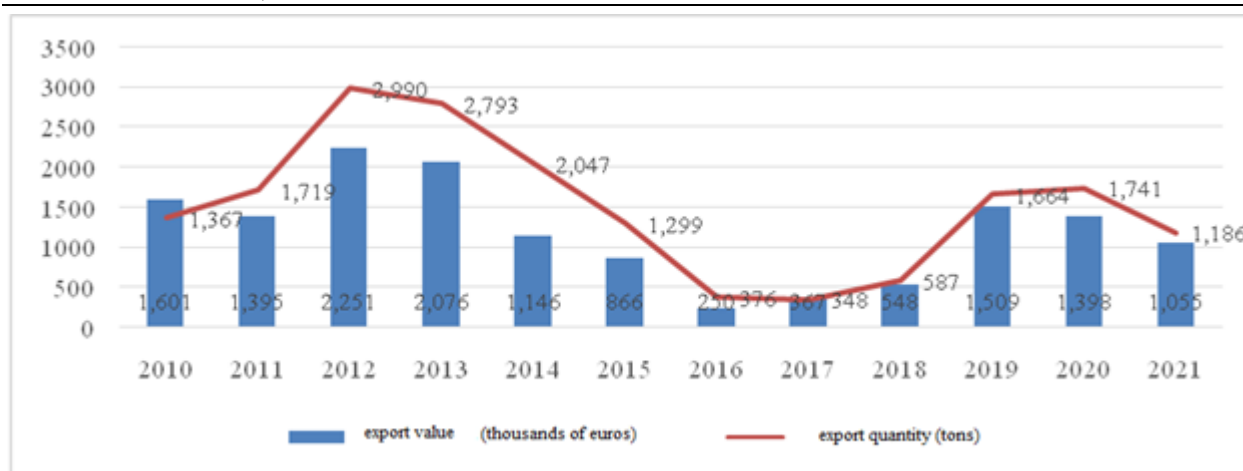


Fig. 3. Evolution of tomato export during 2010-2021

Source: Data processing Intracen.org - Trade Map - Product: 0702 Tomatoes, Fresh or Chilled, Accessed on 15.02.2023 [20].

The top of the first six countries that imported tomatoes from Romania consists of the following countries: Poland (476 thousand euros and 555 tonnes), Republic of Moldova (222 thousand euros and 256 tonnes), Spain (68 thousand euros and 80 tons), Belgium (63 thousands and 56 tons), the United Kingdom (39 thousand euros and 38 tons) and Greece (36 thousand euros and 42 tons) (Table 7).

Table 7. List of the main 6 countries that imported tomatoes from Romania in 2021

Importing countries	Exported value (Thousand Euro)	Exported quantity (Tons)
Poland	476	555
Moldova, Republic of	222	256
Spain	68	80
Belgium	63	56
United Kingdom	39	38
Greece	36	42

Source: Data processing Intracen.org - Trade Map - Product: 0702 Tomatoes, Fresh or Chilled, Accessed on 15.02.2023 [20].

### Tomato import

Regarding, the import of tomatoes, the analysis highlighted an upward trend at the level of the period 2010-2021. From a value

point of view, the import oscillated between 28,858 thousand Euros and 92,561 thousand euros and quantitatively ranged between 41,395 tons and 92,561 tons (Figure 4).

Although the production of tomatoes grown in protected areas has increased, national production cannot cover the consumption needs of the population even in off-season periods and it is necessary to resort to imports from countries such as Turkey. (53,223 thousand euros and 58,464 tonnes), Germany (18,644 thousand euros and 11,293 tons), the Netherlands (15,697 thousand euros and 5,495 tons), Spain (12,770 thousand euros and 7,075 tons) or Italy (4,768 thousand euros and 3,402 tons) (Table 8).

Table 8. List of the main 6 countries that exported tomatoes to Romania in 2021

Exporting countries	Import value (Thousand Euro)	Imported quantity (Tons)
Türkiye	53,223	58,464
Germany	18,644	11,293
Netherlands	15,697	5,495
Spain	12,770	7,075
Italy	4,768	3,402

Source: Data processing Intracen.org - Trade Map - Product: 0702 Tomatoes, Fresh or Chilled, Accessed on 15.02.2023 [20].



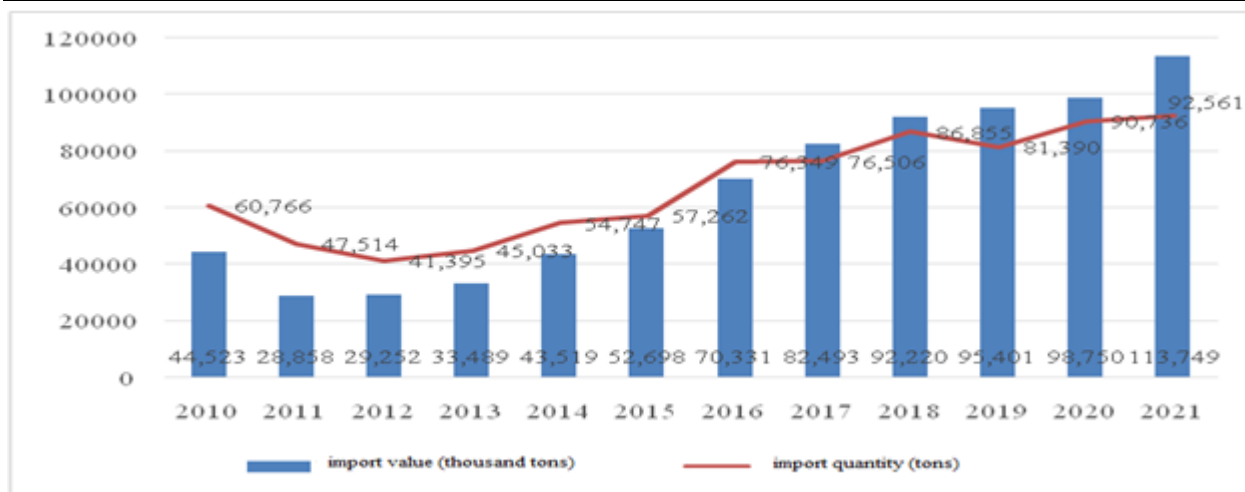


Fig. 4. Evolution of import of tomatoes in the period 2010-2021

Source: Data processing Intracen.org - Trade Map - Product: 0702 Tomatoes, Fresh or Chilled, Accessed on 15.02.2023 [20].

### The trade balance of tomatoes

The commercial balance of a country reflects the imports and exports of goods and services, over time, representing the net difference between the value of exported and imported goods and services. The balance is favorable if imports are smaller than exports, otherwise, the commercial balance is deficient.

An analysis of statistical data (Figure 5), reveals that in Romania, imports exceed tomato exports, resulting in a commercial deficit of -27,001 thousand Euros in 2012 until -97,352 thousand Euros in 2021.

According to the tendency line  $y = -8,054.3x - 11,882$ , the commercial balance decreased on average by approx. 8054 thousand euros per year (Figure 5).

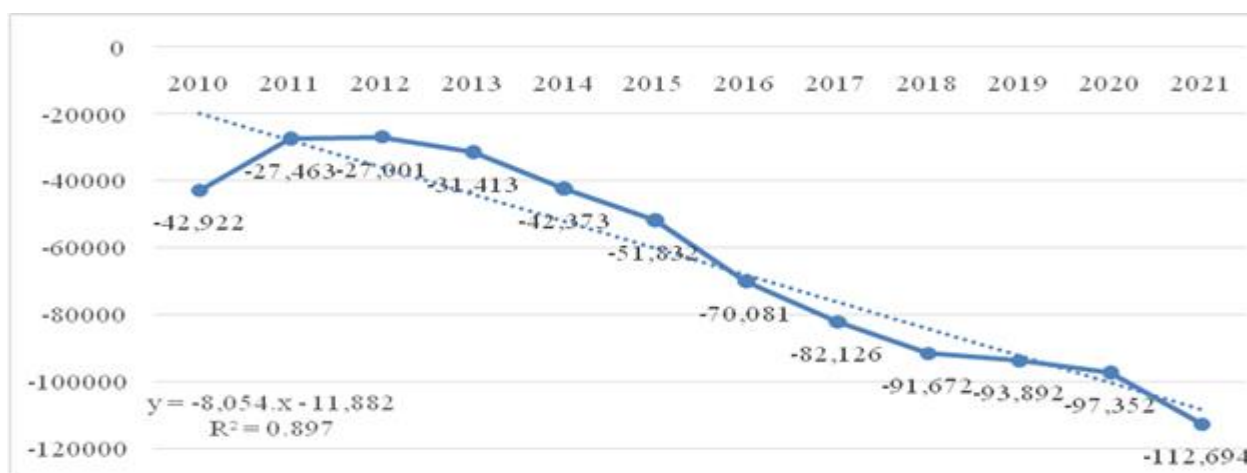


Fig. 5. The evolution of the commercial balance of tomatoes in the period 2010-2021 (thousand euros)

Source: Data processing Intracen.org - Trade Map - Product: 0702 Tomatoes, Fresh or Chilled, accessed on 15.02.2023

### CONCLUSIONS

Romania has the potential to become a country with performance in the horticultural field, especially for tomatoes, especially organic ones. Family farms specialized in vegetables are a tradition in our country, which is why our country currently holds a

large part of vegetable holdings in the European Union. However, many of them have a very small dimension, for which they are not competitive, but contribute to the vitality of the Romanian village, and to maintaining the traditions and culture in the rural area.

Before 2000, the greenhouse area had thousands of hectares, and now it is approx. 300 hectares. Currently, this greenhouse area is too small to ensure the vegetables we need during the cold season. In this sense, it is necessary to implement special programs for the cultivation of vegetables in protected areas and to supply consumer products in winter.

According to statistics, almost two-thirds (65.1 %) of the population of Romania does not consume fruits and vegetables daily. In view of this situation, it is necessary to develop a special program for the daily consumption of vegetables and fruits. European funds and common agricultural policy are important tools for supporting the horticultural sector in Romania.

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