

RESEARCH ON CHERRIES SECTOR IN ROMANIA

Elena SOARE¹, Iuliana DOBRE²

¹University of Agricultural Sciences and Veterinary Medicine Bucharest, 59 Marasti, District 1, 011464, Bucharest, Romania, Phone: +40213182564, Fax:+40213182888, Mobile:+40744 6474 10, Emails: soare.elenausamv@gmail.com;

²Academy of Economic Studies, Bucharest, 5-7 Mihail Moxa Street, District 1, 010961, Bucharest, Romania, Phone:+40213119790/112, Email:iulya_dobre@yahoo.com

Corresponding author: soare.elenausamv@gmail.com

Abstract

This paper is a quantitative research which highlights aspects about production and marketing of cherries and sour cherries in Romania. In order to achieve the objective, the relevant indicators were analyzed during the period 2012-2016. The indicators analyzed in the paper refer to the number of cherries and sour cherries at national level as well as at macro-regional level; cherry and sour cherry production in Romania and on macro-regions; average production of cherry and sour cherry tree at national and macro-regional level; prices for cherries and sour cherries in Romania; average consumption per year of cherries and sour cherry at national level, also imports and exports. In Romania the cherry is a very productive culture, which has contributed to the achievement of notable performances from production point of view. The placing on the third place in the world ranking in terms of yield per hectare is conclusive. In 2016, the Romanian cherry production accounted 8.2% of the production achieved at the level of the European Union. The National Institute of Statistics is the main source of data used in this study.

Key words: cherry, sour cherry, cherry and sour cherry varieties, average production, consumption

INTRODUCTION

Worldwide there are numerous cherry species, but two categories have been noted such as cherries belonging to the species *Prunus Avium* and sour cherries of the species *Prunus Cerasus*. Cherry tree is included in the Rosaceae. Along with cherry tree, in Rosaceae are plum tree, apricot tree; apple tree [21].

Cherries and sour cherries are important fruits for the population because they contain a number of mineral salts, vitamins and sugars that are easy to assimilate. The chemical composition of cherry and sour cherries is presented in table 1.

Cherries and sour cherries have a double use: 1) they are intended for the fresh consumption of the population; 2) are intended for industrial processing [4].

According to statistical data, at worldwide the cherry demand is covered at 26% [5].

This situation is an opportunity for farmers who want to produce quality cherries so as to secure substantial profits from their selling abroad.

Table 1. The chemical composition of cherry and sour cherry fruits

Specification	Cherry	Sour cherry
Dry substance	10.79-24.70	11.45-22.17
Sugar	7.70-16.82	6.34-13.80
Acidity	0.49-1.36	1.02-2.41
Tanoid substance	0.06-1.30	0.18-0.21
Pectic substance	0.06-0.39	0.05-0.29
Proteic substance	0.54-1.36	0.70-1.90
Mineral substance	0.19-0.62	0.37-0.59
Vitamin C (mg,%)	0.40-14.00	1.00-13.00
Energetic value (Kcal)	43.16-98.40	46.72-88.68

Source: [4]

This situation is an opportunity for farmers who want to produce quality cherries so as to secure substantial profits from their selling abroad. In Romania, cherry grows and develops well in those areas where the annual average temperature is 9.0-10.50°C [2].

Also, in Romania, the best areas are found: the hills of the Iasi, Botosani, Cluj, Mures, Bacau, Vaslui, Vrancea, Arges, Dolj and Valcea counties [8].

The best areas for sour cherries statistics data the cherries are substantial; Romania being on the fifth rank about cherries production are Iasi, Botosani, Cluj, Mures, Bacau, Vaslui, Vrancea, Arges, Dolj si Valcea [8].

According to European ranking Romania is on the fifth place. In Romania over 70% of cherries are in Bacau; Vaslui; Galati; Botosani; Iasi. Generally, much of cherry production is made in Moldova [3].

At present, the Romanian market shows an increase in demand for domestic cherry production. According to published statistics, the investment per hectare of cherries can reach 20,000 euros with drip irrigation and intensive system. At national level several varieties of cherries are grown. In Romania, these cherry varieties are both native, but also foreign. Foreign varieties have been adapted to pedological and climatic conditions in Romania [2].



Photo 1. Early Lorry
Source: [24]

Among the varieties of the most important cherries found in Romania are Early Lorry, Bistrita cherry, Rubin, Regina, Germersdorf, Oblacinska, Mocanesti, Crisane. The Early Lorry variety breeds in May and has high yields per hectare.

Bistrita cherry- matures in the first half of July.



Photo 2. Bistrita cherry
Source: [7]

Rubin—matures in the end of June [7].



Photo 3. Rubin
Source: [7]

Regina variety matures in the period of 15 June-July. This variety records a good yield four years after planting, although it enters the fruit two years after planting.



Photo 4. Regina
Source: [19]

Germersdorf – matures in the end of June



Photo 5. Germersdorf
Source: [11]

In Romania cherry varieties differ, depending on the characteristics of the area and the objectives of the farmers. If the varieties grow early, the profits will be more substantial, due to the high prices both internally and externally. It is necessary to specify that most cherry varieties, both indigenous and foreign, are resistant to cold [1, 2, 3, 21].

In Romania, the sour cherry is reduced compared to cherry although there are, on the one hand, favorable conditions for this culture; and on the other hand are required in large quantities for export. Increased demand for sour cherry on the external surface is primarily due to the increased contingency of nutrients, vitamins and mineral salts [13].

The main varieties cultivated in Romania are: Vrancean; Morella; Ilva; Oblacinska; Tarina; Early in Cluj; Great early; Mocanesti 16, Crisana 2 [8].



Photo 6. Oblacinska
Source: [10]

The Oblacinska variety is characterized by medium-sized trees, which predominate early and flowering in the third year. This variety is productive. An essential feature for this variety is that it adapts to any type of soil and

can be planted in all regions of the country [10].

The Mocanesti variety is highlighted by the fact that it is very productive; resistant to frost and drought; is semi-ripe. The harvest is at the end of July [17].



Photo 7. Mocanesti
Source [17]

The Crisane 2 varieties grow after half of June [23].



Photo 8. Crisane 2
Source: [23]

MATERIALS AND METHODS

The paper presents the main trends in the production and marketing of cherries and sour cherry in Romania. Most statistical data analyzed in the paper were taken from the National Institute of Statistics. In order to achieve the objective of this paper a number of specialized books were consulted. The paper, aimed to analyze the main specific indicators to outline the manifestations related to the production and marketing of cherries and sour cherries in Romania. The indicators refer to number of cherry and sour cherry, production

of cherry and sour cherry, productivity at national level, average price, average consumption, imports and exports. The indicators were analyzed in dynamics.

RESULTS AND DISCUSSIONS

An important key of this paper is number of cherries and sour cherries existing in orchards. Various varieties of cherries and sour cherries are cultivated in Romania.

The varieties cultivated in Romania are both native, but also foreign. Foreign varieties are adapted to different areas. All varieties mature from May 10 to July 20.



Photo 9. Cherry flower

Source: [22]



Photo 10. Sour cherry flower

Source: [9]

Table 2 shows the evolution of the number of cherries and sour cherries in Romania in the period 2012-2016, both at national level and at macroregional level. In the analyzed period the number of cherries and sour cherries showed a decreasing trend. At the national level, the largest number of cherries and sour cherry was recorded in 2012 (5,858,290 cherries and sour cherries), and the smallest number was 5,438,277 (2016). In 2016, in Romania, there was a decrease of 7.17% in the number of cherries and sour cherries compared to 2012. From the data presented in table 2, it can easily be noticed that in Macroregion 2 are recorded the most cherries and sour cherry.

Table 2. Cherry and sour cherry trend at national and macroregional level, 2012-2016 (number)

Specification	2012	2013	2014	2015	2016	2016/ 2012 (%)
Romania	5,858,290	5,654,257	5,586,479	5,461,968	5,438,277	92.83
Macroregion 1	1,253,757	1,300,598	1,283,611	1,160,842	1,184,446	94.47
Macroregion 2	2,416,649	2,311,580	2,347,496	2,351,291	2,306,999	95.46
Macroregion 3	846,498	866,265	797,567	786,690	787,154	92.98
Macroregion 4	1,341,386	1,175,814	1,157,805	1,163,145	1,159,678	86.45

Source: Own calculation based on National Institute of Statistics, Tempo On-line Database, 2018 [15]

In 2016, this Macroregion held 42.42% of the number of cherries and sour cherry existing at national level. The largest number of cherries and sour cherries was 2,416,649 (2012). In 2016, the number of cherries and sour cherries decreased by 4.54% compared to 2012. In 2016, at macroregional level, the number of cherry and sour cherry was: Macroregion 1 (21.77%); Macroregion 4 (21.32%) and Macroregion 3 (14.47%). It has been noticed that at macroregions level, in 2016, the number of cherries has decreased compared to 2012 [3].



Photo 11. Cherries

Source: [6]



Photo 12. Sour cherries in plantation

Source: [18]

The production of cherries and sour cherries at national level represents an important segment for the domestic market. The evolution of cherry and sour cherry production at national and macro-regional level in the period 2012-2016 is presented in the table 3. Also, production of cherries and sour cherries varies in the period. At national, level the higher production registered in 2014 (82,808 tones), and the smallest was 70,542

tones (2012). The high production of cherries and sour cherries, registered at the national level in 2014, was due to high production on the high tree. In Romania, in 2016, there was an increase of cherry and sour cherry production by 4.66% compared to 2012. As expected, the high production is recorded in Macroregion 2, as here is the largest number of cherries and sour cherries. In this macro-region, from the data presented, it is observed that in 2016 the production of cherries and sour cherries increased by 5.88% compared to 2012. This increase of production registered in Macroregion 2 is higher, compared with the increase registered at national level, during the same period. The production of cherries and sour cherries made in Macroregion 2 obtain in 2016 accounted for 44.68% of the national production. The smallest production of cherries and sour cherries was obtained in Macroregion3

Table 3. Cherry and sour cherry production at national and macroregional level, 2012-2016 (tons)

Specification	2012	2013	2014	2015	2016	2016/2012 (%)
Romania	70,542	80,477	82,808	75,503	73,834	104.66
Macroregion 1	14,724	16,785	16,262	14,208	13,902	94.41
Macroregion 2	31,161	35,029	36,538	33,947	32,994	105.88
Macroregion 3	10,191	12,304	12,466	11,324	11,068	108.60
Macroregion4	14,466	16,359	17,542	16,024	15,870	109.70

Source: Own calculation based on National Institute of Statistics, Tempo On-line Database, 2018 [15]

This production varied between 10,191-12,466 tons. Macroregion 3 has production which increased with 8.60% in the period 2012-2016. Also, Macroregion 4 registered an increase with 9.70% in 2016 compared to

2012. There has been an increase in the production of cherries and sour cherries, as well Macroregion 4. In Macroregion 1, in 2016, there was a decrease of cherry and sour cherry production by 5.59%, compared to 2012.

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Photo 13. Cherries and sour cherries from sale

Source: [16]



Photo 14. Production of cherries at farm gate

Source:[12]

In 2016, Romania ranks fifth among the top cherry producers in the European Union. The cherry production made in Romania in 2016 accounts for 8.2% of total cherry production in the European Union. At European level has 29,3% of production, Spain 11,9%, Italy 11,2%, Hungary 9,9% [20].

Table 4 presents the evolution of average production in the period 2012-2016. About the dynamic of cherry the average production of cherries and sour cherries on the tree, different evolutions are observed at certain time intervals. In the period 2012-2014, the average cherry and sour cherry production recorded a positive trend, in the period 2014-2015 the average production decreased and in the period 2015-2016, the production remained constant at 14 kg per tree. In Romania, in 2016, the average production of

cherries and sour cherries on the tree increased by 12 kg / tree (2012) to 14 kg / tree (2016). The highest average production of cherries and sour cherries on the tree was 15 kg (2014).

At macroregional level, the largest production of cherries and sour cherries on the tree were recorded in 2014 (16 kg/tree). These high average yields were recorded in Macroregion 2 and in Macroregion 3.

In macroregion 1 the average cherry and sour the cherry and sour cherry production remained constant in 2016 compared to 2012 (12kg /tree). The higher productions were in 2014 (16 kg/tree).

These productions were registered in microregions 2 and 3. In the period 2012-2016 the average production of cherry and sour cherry registered 12 kg/tree.

Table 4. Cherry and sour cherry production, period 2012-2016 (kg/tree)

Specification	2012	2013	2014	2015	2016	2016/2012 (%)
Romania	12	14	15	14	14	116.66
Macroregion 1	12	13	13	12	12	100.00
Macroregion 2	13	15	16	14	14	107.69
Macroregion 3	12	14	16	14	14	116.66
Macroregion 4	11	14	15	14	14	127.27

Source: Own calculation based on National Institute of Statistics, Tempo On-line Database, 2018 [15]

Also, in macroregion 4 average production increased in 2016 compared to 2012. In Romania, the average prices for cherry and sour cherries were affected by a number of representative factors, of which: domestic production; effective demand; import; the income of the population; food consumption

model. It is important to note that at the beginning of the season the prices are higher, both for cherries and for sour cherries. Out of season, cherries and sour cherries come from outside Romania and at high prices. The evolution of average prices for cherries and sour cherries at national level in the period

2012-2016 is presented in table no.5. From the statistical data presented, it can be noticed that during the analyzed period the average price for cherries is higher compared to the average price for sour cherries. This shows

that in Romania cherries are more popular with consumers. The average cherry price has changed from one year to the next. The highest price for cherries was recorded in 2012(7.47lei/kg).

Table 5. Romanian average price of cherry and sour cherry, period 2012-2016 (Lei/kg)

Specification	2012	2013	2014	2015	2016	2016/2012 (%)
Cherry	7.47	6.51	7.06	6.26	7.26	97.18
Sour cherry	6.63	5.55	5.34	4.99	5.38	81.14

Source:Own calculation based on National Institute of Statistics, Tempo On-line Database, 2018 [15]

The high average price for cherries in 2012 was also determined by the small domestic offer due to a reduced cherry production. For cherries, in 2016, the price dropped by 2.82%, compared to 2012. For sour cherries, the following prices were recorded: during 2012-2015, the average price registered a decreasing trend; and for the 2015-2016 period there was an increasing trend. In 2016, the average price for sour cherries decreased by 18.86% compared to 2012.

In Romania, the annual average per capita cherry-sour cherry varied between 3.3 kg and 3.8 kg (Fig. 1). The highest average annual per capita cherry-tree consumption per capita was recorded between 2013 and 2014 (4.0 kg / inhabitant). This high consumption was due, on the one hand, to lower prices and, on the other hand, to higher domestic production.

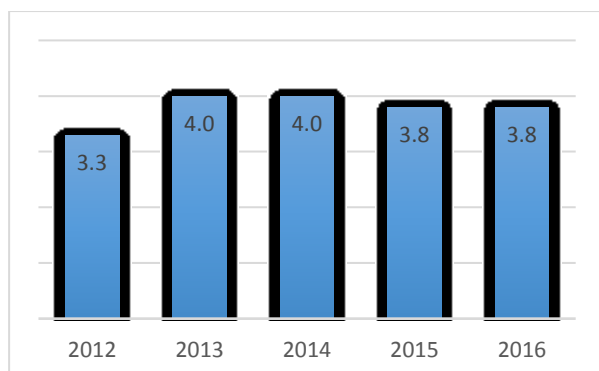


Fig. 1. Annual average consumption per capita of cherry and sour cherry, in Romania, period 2012-2016 (kg / inhabitant)

Source: Own design based on NIS Tempo-online database 2018 [15]

The lowest annual average per capita cherry-tree consumption was 3.3 kg (2012). In 2016,

the annual average per capita of cherry and sour cherry increased. The cherry price decreased in 2016 with 2.82%, Also, average sour cherry price decreased in 2012-2015, but in 2015-2016 the price increased.

In 2015, according to data provided by the National Institute of Statistics, exports of cherries and sour cherries were of 4,914 tonnes (in fresh fruit equivalent). Exports of cherries and sour cherries in 2015 increased by 36.61% compared to 2014. This increase in exports shows that this fruit category is demanded and appreciated externally. In terms of quantitative imports of cherries and sour cherries in 2015, they were of 4,840 tons. It can be noticed that, in 2015, quantitative imports of cherries and sour cherries were smaller compared to exports of cherries and sour cherries. In 2015, quantitative imports of cherries and sour cherries increased by 15.70% compared to 2014. The increase in imports of cherries and sour cherries is due in large measure to the increase in demand for this fruit category, outside the period in which they are found in abundance. In order to reduce the quantitative imports of cherries and sour cherries, it is necessary to plant early varieties of both cherry and sour cherry [14].

CONCLUSIONS

Cherries and sour cherries are important both for the consumption of the population and for the industrial processing. Regarding the production and marketing of cherries and cherries in Romania, during 2012-2016, the following trends were found:

-The largest number of cherries and sour cherries at national level was 5,858,290 (2012);

-At macroregional level, macroregion 2 has been highlighted with the large number of cherries and sour cherries 2,416,649 (2012);

-The highest quantity of cherries and sour cherries at national level was 82,808 tons (2014). At the opposite pole, the smallest amount of cherries and sour cherries achieved was in 2012 (70,542 tonnes);

-In 2016, more than 40% of the cherry and sour cherry production at national level was made in macroregion 2;

-At the level of the European Union in 2016, Romania ranked fifth in terms of cherry production;

-In 2014, at national level, the highest average production was achieved per cherry and sour cherry tree (15 kg / tree);

-During the analyzed period, at the macroregional level, average yields were recorded on the cherry trees and sour cherry trees higher than the average production achieved at national level. The highest average production per cherry and sour cherry tree was 16 kg / tree (2014). These average productions were made in macroregions 2 and 3;

-At national level, during the analyzed period, the average price for cherries was higher compared to the average price recorded for sour cherries;

-In the period 2013-2014, the highest consumption of cherries and sour cherries (4.0 kg / inhabitant) was recorded at national level;

-In 2015, exports and imports of cherries and sour cherries increased compared to 2014;

-Due to the growing demand for cherries and sour cherries, both on the domestic market and on the foreign market, for Romanian farmers, the production and marketing of these fruit categories is an opportunity.

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