

FORECAST REGARDING THE EVOLUTION OF THE WINE VITICULTURE SECTOR FROM ROMANIA

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Abstract

Wine growing has always held a very important spot in agricultural economy both nationally and worldwide by being appreciated from many points of view such as: social (nutriment source: grapes, wine, traditional products that come from it) and economic (capitalizing viticulture products, home trade, international trade). This study analyzes the evolution of the viticulture sector and also Romania's spot among the large producers in the world. By analyzing the future perspectives of the viticulture sector on a national level we can note the fact that it has an ascending trend when it comes to surfaces and grape productions, the pedo-climatic conditions and the used technologies being of great importance. In order to develop this sector a series of financial aids and support measures have been provided so that the farmers can benefit.

Key words: viticulture, production trends, evolution

INTRODUCTION

Viticulture represents an agricultural activity that is usually more profitable on the surface than annual crops. The red and white grape varieties are cultivated for fresh consumption or for wine, juice and raisins production. The productiveness and quality of the grapes are determined by the fertility of the soil and the nutritional state of the plants. Grapes are placed among the main eaten fruits worldwide with a production of approximately 75 mil. tons every year, from which 50% are used to produce wine [4, 5, 6, 7].

Romania is placed among the main viticulture countries in the world. It ranks 11th worldwide and 5th in the EU when it comes to vineyards surface. In the Romanian agriculture the grapevine and wine sector represents an important share by contributing to the country's economy. The factors that contribute to the development of viticulture are the favorable conditions that the grapevine finds in the country's territory as well as the climate and soil [8, 2, 5].

Grapevine plantations are grouped territorially by viticulture regions, viticulture areas,

viticulture centers, vineyards and viticulture lands according to The Vine and Wine Law no. 2004/2002.

Romania's viticulture regions are: Muntenia's Hills, Banat's Hills, Oltenia's Hills, Moldova's Hills, The Transylvanian Plateau, Crișana's and Maramureș's Hills, Dobrogea's Terraces [3, 10, 13].

By being a sector of interest, many studies have been made in this domain. The researchers and the breeders are motivated to reproduce new varieties that are used in viticulture so that they can stand the disasters that the viticulture is facing: epidemics, global warming but also the changes in consumer demands [10, 13].

Bărbulescu O. (2017), emphasized the fact that promoting the national viticulture sector on the foreign market it's essential to its development, especially by using autochthon grapevine varieties [1]. It can be taken advantage of this fact through the tourism potential of the specific areas, Romania having a series of viticulture wineries with diversified ranges of wine [11, 12]. The aim of the paper consists in a detailed analysis of the evolution of grape areas and productions

at national level but also an estimate of them until 2027, in order to more efficiently manage financial, material, human resources, etc. as well as the substantiation of the decisions at the level of the Ministry of Agriculture and Rural Development regarding the policy of supporting the products of national interest [9].

MATERIALS AND METHODS

The study followed the analysis of the evolution of the viticulture sector on both national and global level, highlighting the spot occupied by Romania within this sector.

The data used within the study that have been provided by National Institute of Statistics (NIS), International Organization of Vine and Wine (OIV) and information taken from professional documents and reports.

The statistic data in the study have been processed with the following statistical indicators: minimum, maximum, average, standard deviation, coefficient of variation and annual rate, for 2007-2019.

With the indicators help one can see the evolution in time of the grapevine sector, by analyzing surfaces, total and average production per hectare. For a future perspective of the viticulture sector on a national level the *Forecast* function has been used, so that we can estimate the value of surfaces and grape productions on an 8 years period, by observing the tendency of this sector.

RESULTS AND DISCUSSIONS

At global level

The viticultural surface at global and European level between 2014-2018, according to OIV data, the viticultural surface on a global level has decreased by 1.42% in 2018, compared to 2014 (7.56 mil ha). Regarding the viticulture surface at European level, it remained constant, varying around the average of 3.23 mil. ha.

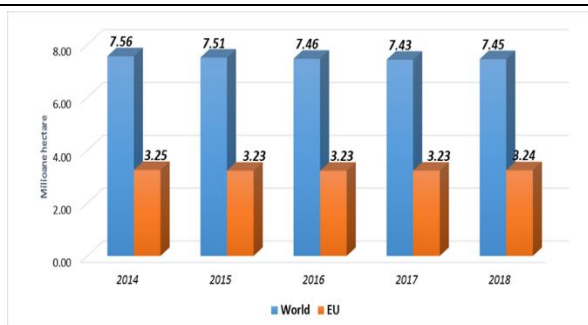


Fig. 1. Evolution of viticultural surface on EU and global level

Source: OIV processed information [12].

The global surface in 2018 for grapevine corresponding to total surface planted with grapevine, including the one that is not yet in production and for all purposes (wine, table and dried) has been of 7.4 million hectares.

Following the distribution of the viticulture surfaces worldwide (Fig. 2) one can see that Europe has approximately 43.5% (3.2 mil. ha) of total viticulture surface, being followed by the large producers such as China, Turkey, USA and Argentina with percentages of 11.75% (875 thousand ha), 6% (448 thousand ha), 5.90% (439 thousand ha) and respectively 2.93% (218 thousand ha).

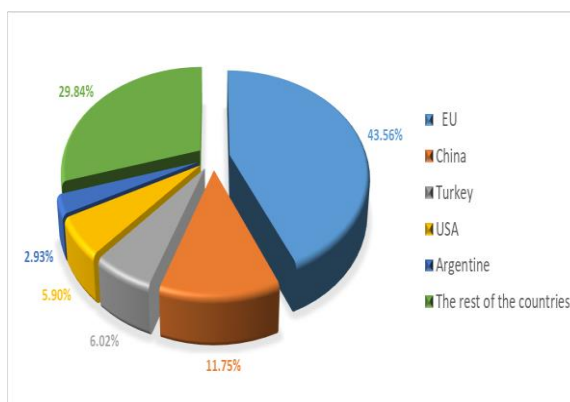


Fig. 2. Global distribution of viticulture surfaces, 2018

Source: OIV processed information [12].

In Europe the most recent available data shows a stabilization of the viticulture surfaces in Spain (969 thousand ha), France (789 thousand ha), Romania (191 thousand ha), Greece (106 thousand ha), Germany (103 thousand ha) and Switzerland (15 thousand ha). It's estimated that the viticulture surface in Italy has grown with approximately 5 thousand ha between 2017 and 2018 in order to reach 705 thousand ha.

The global total grape production in 2018 has been of 77.8 mil. tons, with 4.7% more than 2014 (74.3 mil. tons). Following its distribution by ranges there have been registered percentages out of total of: 57% wine grape (44.34 mil. tons), 36% table grape (28 mil. tons) and dried grape 7% (5.44 mil. tons) (Fig. 3).

Table 1. Statistical indicators on the evolution of areas

	2007	2019	Min	Max	Average	St Dev	CV (%)	Annual Rate (%)
	Thousand Ha							
Bearing vines	187.6	178.23	176.62	187,629	179.43	3.53	1.97	-0,43
Table grape	11.20	6.28	6.284	11.20	8.13	1.56	19.16	-4,70
Wine grape	176.4	171.95	167.42	176,427	171.50	2.88	1.68	-0.21

Source: data processed from the NIS [9].

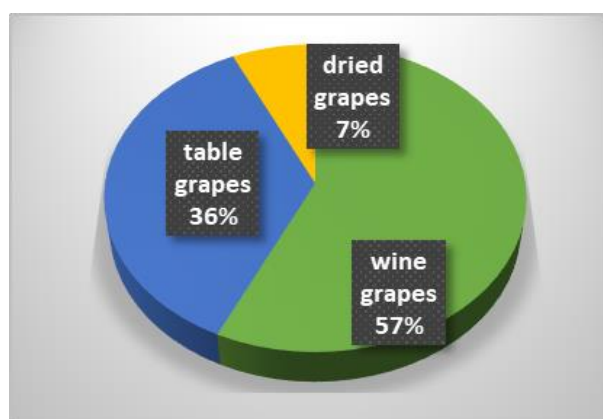


Fig. 3. Global distribution of grape production by ranges, 2018.

Source: Data processed from OIV [12].

Among the largest grape producers worldwide are China with 11.7 mil. tons, Italy with 8.6 mil. tons, USA with 6.9 mil. tons, Spain (6.9 mil. tons) and France with 6.2 mil. tons. Romania had in 2018 a grape production of 1.3 mil. tons, 1.67% of total global grape production.

Analyzing by grape varieties production one can note that:

-the highest percentages of wine grape have been registered in: France (99.6%), Germany (99.6%), Spain (96%) and Australia (90.9%), at the opposite being Egypt (0.50%), India (1.50%), Turkey (3.2%) and China 10.3%.

-main table grape producers: China (84.1%), Egypt (99.5%), India (92.6%), placing last are countries like France, Germany, Argentina and Spain.

-among the countries producing dried grape (grape raisings) can be found Turkey (40.7%), Iran (23.7%) and USA (18.1%).

At national level

The bearing vines surface at national level has been of 178.23 thousand hectares in 2019, being lower by 5% compared to 2007 (187.62 thousand hectares), throughout the whole period of study the bearing vines surface has registered a decreasing trend with a negative annual rate of 0.43% and a coefficient of variation of 1.97% for 2007-2019 span (Table 1).

Out of bearing vines surface total, table grape have 3.5% (6.28 thousand ha), while the rest of the percentage of 96.5% is held by wine grape, Romania being a country that produces wine of diverse variety acknowledged at an European level.

Analyzing the evolution of the grapevine surface cultivated for table grape on a national level between 2007-2019 it had followed a decreasing trend, decreasing from 11.2 thousand hectares in 2007 to almost a half until 2019, to 6.28 thousand hectares. The average annual rate registered in this period being a negative one of 4.7%, with a coefficient of variation of 19,16 %. The table grape surfaces followed the same trend, registering a decrease during the analyzed period, the average annual rate being negative, of 0.21%.

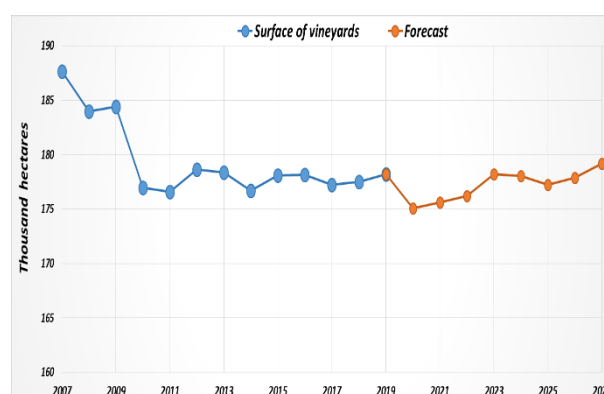


Fig. 4. Forecast of the surface of vineyards, Romania

Source: authors' calculations.

According to forecasts it's expected, up to year 2027, the bearing vines surface to surpass 177.8 thousand hectares, if this trend that had been analyzed between 2007-2019 remains the same (Fig. 4).

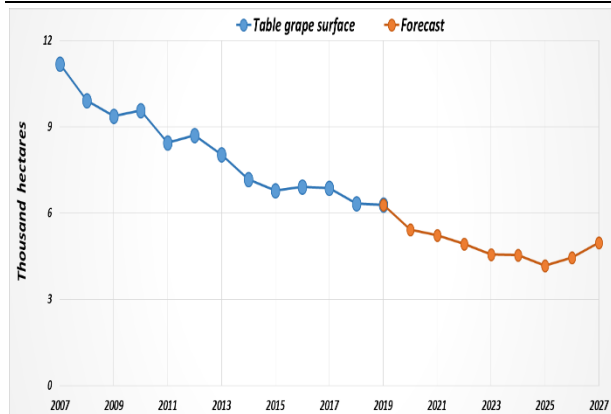


Fig. 5. Forecast of the table grape surface, Romania
 Source: authors' calculations.

As for the table grape surfaces, as a result of the conducted forecasts, in the following period 2020-2027, they will decrease up to 4.49 thousand hectares (Fig. 5).

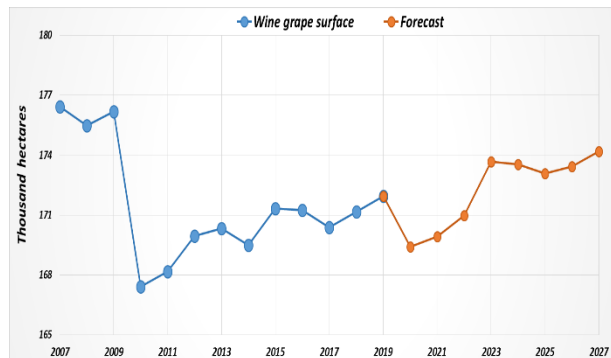


Fig. 6. Forecast of the wine grape surface, Romania
 Source: authors' calculations.

According to forecasts the trend for the grapevine surfaces is an oscillating one, coming to 174.20 thousand hectares in 2027 (Fig. 6).

Regarding the total production of grape, it has varied between 873.22 thousand tons (in 2007) and 977.81 thousand tons. Analyzing the percentage of the grape types we can observe that during the analyzed period the largest percentage of production total was held by the wine grape, varying between 90.68% and 95.53%. The percentage of table grape production out of production total has varied between 4.59% and 9.32%.

Analyzing the bearing vines production between 2007-2019, it's noted that the country overall production registers an oscillating trend with a maximum in 2018 of 1,144.3 thousand tons.

The registered average annual rate has been positive, of 0.95%, with a coefficient of variation of 14.95% (Table 2).

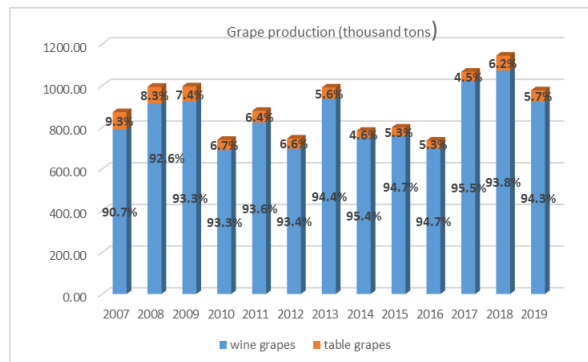


Fig. 7. The evolution of grape production, Romania
 Source: NIS calculations [9].

Table 2. Statistical indicators on the evolution of production in Romania (thousand tons)

	2007	2019	Min	Max	Media	St Dev	CV (%)	Annual Rate (%)
	Thousand Tons							
Bearing vines	873.22	977.81	736.90	1,144.30	901.205	134.86	14.96	0.95
Wine grape	791.88	922.09	690.46	1,072.90	845.59	127.54	15.08	1.28
Table grape	81.35	55.72	35.96	81.79	56.80	15.52	27.33	-3.10

Source: authors' calculations.

The table grape production in 2019 has been lower by 31.87% than 2007 (81.34 thousand tons). The registered average annual rate is a negative one of 3.1%, with a coefficient of variation of 27.33% (Fig. 7).

At national level, the wine grape production has followed an ascending trend from 791.9 thousand tons in 2007, to 922.02 thousand tons in 2019.

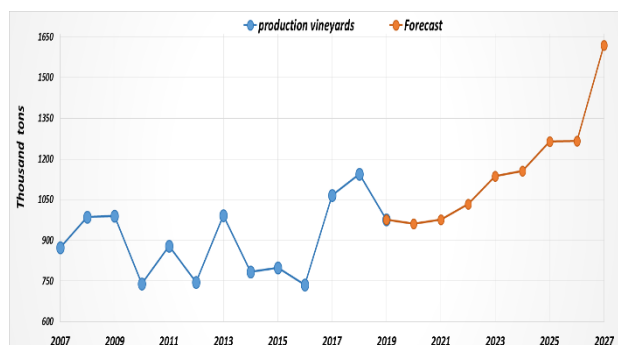


Fig. 8. Forecast of vineyards production, Romania
 Source: authors calculations.

The average annual rate registered during the analyzed period has been of 1.28%, with a coefficient of variation of 15.08% compared to the period average of 845.6 thousand tons. By forecasting the total grape production, we can observe in Fig. 8 the fact that it shows an ascending trend, also confirmed by the growth rate during 2007-2019, reaching a maximum value in 2027 of 1,620 thousand tons of grapes.

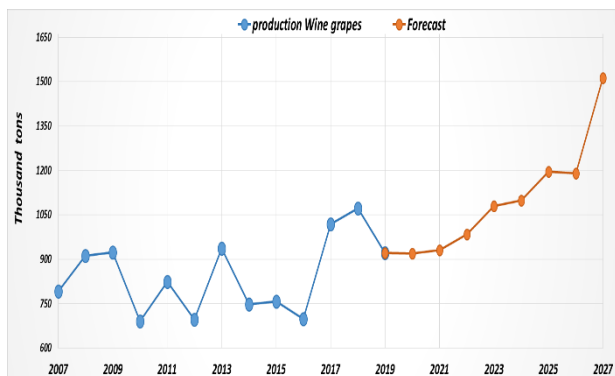


Fig. 9. Forecast of wine grape production, Romania
 Source: authors' calculations.

According to forecasts (Fig. 9), the wine grape production shows an ascending trend between 2020-2027, reaching a maximum in the final year with 1,512 thousand tons, this being also due to the average annual rate registered in the period prior to the forecast.

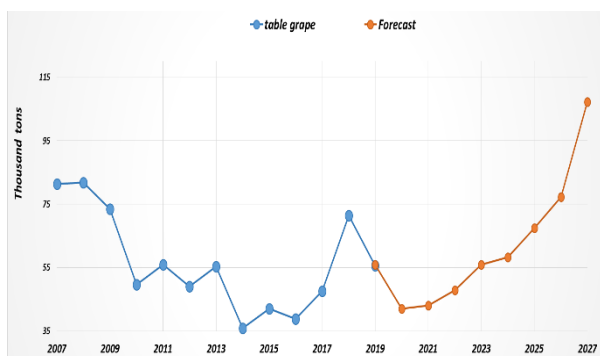


Fig. 10. Forecast of table grape production, Romania
 Source: authors' calculations.

Regarding the table grape production, it is estimated to reach a value of 107,3 thousand tons in 2027, if there is going to be an increase of the surfaces and the climate conditions will be favorable. In Table 3 we can see the main statistical indicators calculated for average grape production at national level.

Table 3. Statistical indicators on the average production in Romania (tones/ha)

	2007	2019	Min	Max	Average	St dev	CV (%)	Annual Rate (%)
	Tons/ha							
Bearing Vines	4.7	5.5	4.14	6.45	5.02	0.75	14.92	1.38
Table grape	7.3	8.9	5.01	11.27	7.04	1.73	24.55	1.68
Wine grape	4.5	5.4	4.08	6.27	4.93	0.73	14.78	1.49

Source: authors' calculations.

The average grape production per hectare for bearing vines has registered values between 4.14 tons/ha and 6.45 tons/ha, following an oscillating trend, the average annual rate being of 1.38% during 2007-2019.

Regarding the table grape, one can note they register the largest average production, of over 8.9 tons/ha compared to the average production of wine grape (5.4 tons/ha). They show positive average annual rates of 4.68%, respectively 1.49%. Regarding the evolution in time the average grape production at national level regardless of range has shown fluctuations, these due to climate influence, to the used technology, but also to surface restructuring.

CONCLUSIONS

Grapevine cultivation enjoys a special attention in all the countries that show pedoclimatic conditions that correspond to the requirements of growing grapevine.

As a result of the conducted study it has been observed the fact that at global level the largest grapevine surfaces are owned by Spain, France, China and Turkey.

As for the grape producers, among the largest producers there are: China, Italy, USA, Spain and France. Although the grapevine surfaces are larger, in some countries the total production can vary due to the efficiency per hectare, due to the used variety and technology. Romania ranks 8th at worldwide level regarding grapevine surface and 6th regarding grape production at European level. At national level we can notice a variation of grapevine surfaces and of grape productions, due to different factors. The forecasts made based on statistical data showed an increase trend on the long term of surfaces and productions so that we can say the fact that

the viticulture sector is one for the future. In order for Romania to keep its place among the large producers of grape/wines, consistent investments are necessary in the viticulture sector.

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