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A SWOT EVALUATION OF ORGANIC WINEMAKING REGULATORY IMPLICATIONS IN THE SUPPORT FOR ORGANIC PRODUCTS IN ROMANIA

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Abstract

The paper analyzes the strengths, weaknesses, opportunities and threats (SWOT) for the development of the organic wine market in Romania in the complex context of the new regulations for organic products and the consumer demands. Organic wine has recently been more clearly regulated, but for the consumers some aspects are still confusing, while for the producers several technical and financial challenges are difficult to overcome. In Romania, in the past 5 years, despite of the increased demand, the number of operators involved in organic production decreased, and so did surfaces covered with organic crops. In winemaking, the evolution is even slower than in the other organic product sectors, as the resulted wines are both difficult to produce and sell. To clarify the opportunities this field offers to Romanian winemakers a SWOT analysis was performed, taking into account the main aspects defining the organic wine, from the philosophy of vine growing, to technological demands for organic grape and organic wine production, considering the characteristics of the organic wine as a complex food product.

Key words*: wine, organic wine, eco-label wine, wine legislation, organic products regulations.*

INTRODUCTION

In accordance with several authors who researched this field (Jones and Grandjean, 2017), the roots of modern organic wine industry are in western Europe and USA, in the 1970s. The field was not as successful as in the case of other organic foods, for several reasons, including the perception regarding intrinsic quality, as well as the association of the idea of alcohol with unhealthy foods.

Popularity gradually increased, especially among intellectual and environmentally oriented people, but even now, after 50 years, the world organic wine market is still small.

At present, organic vineyards cover less than 5% of the world's vine surface, but not all the grapes produced as such are turned into wine, or organic wine. In the USA, the most important market in the world for organic wines, consumption reached in 2018 only 1% of the total wine sold (Jones and Grandjean, 2018).

Worldwide the organic grape vineyards covered in 2017 a surface of 233 thousands ha, of which 218 (93.5%) in Europe (FiBL survey 2017). While other sources report larger figures for 2015, with total surface of organic grapes in the world of 333 thousand ha and 293 thousand ha in Europe (FiBL-IFOAM-SOEL 2006-2017), it is clear that the organic grape area is basically located in Europe (Table 1).

Table 1. Organic surfaces dedicated for grapes in the world (data from FiBL survey, 2017)

Country/Region	2013 Organic vineyards (ha)	2017 Organic vineyards (ha)
EU	222815	217824
Europe	222815	**217826**
- France	64012	-
- Germany	-	7300
- Spain	83802	106528
- Italy	66578	103207
- Romania	1976	-
Latin America	3571	5876
Oceania	3970	6615
Africa	55	1695
North America	292	936 (in 2015)
Asia	397	617
World	231101	**232629**

These figures also include surfaces with grapes for fresh consumption, not only those with wine grapes. However, the organic concept is

not necessarily about wine, but about producing better grapes. The viticulturists turn toward organic and even biodynamic practices to obtain better grapes, but also to preserve the soil and the vineyards, especially when also facing climate changes.

Organic production is supported by legislation too and financial support is provided in EU to implement organic farming practices and methods or to promote the products. "Organic farming" is an eligible measure funded in rural development programmes.

In Romania, for the period 2014-2020, 2467 million Euro are allocated from EU and 437 million Euro from the National budget for measures regarding the environment and climate, out of which for Organic Agriculture (measure M11) 200 million Euro from EU, 35.7 from national budget and 236 million Euro public allocation are reserved. Investments for organic farming are included in measure 4.1, "Investments for agriculture exploitations".

Starting 2018 the allocations are as follows: 143 €/ha/year for the conversion period and 129 €/ha/year for as long as organic agriculture practices are maintained. If the farmers receive also support for environment and climate (measure 10), for organic farming they get an additional 39 €/ha/year during conversion and 73 €/ha/year for organic farming, provided both types of practices are maintained. In total, depending on the type of agricultural practices the farmers are engaged in, the cumulative support can be from 119 to 449 euro/ha/year during conversion and 153 to 483 euro/ha/year during organic farming exploitation.

Fig. 1 shows total agriculture area certified organic in Romania and in some representative EU countries and world, in accordance to FAOSTAT (2018) data, while Table 2 shows organic agriculture surfaces, including those in conversion. Surfaces in Romania and the world covered with vineyards producing organic grapes are also shown in Table 2. In Fig. 2 surfaces dedicated to organic grapes and their proportion of the total organic area are presented for Romania and certain representative EU countries.

Table 2. Evolution of surfaces of organic agriculture (including those in conversion) in the world and certain EU countries (selection from FAOSTAT, 2018) and surfaces with organic grapes in the world (FIBL-IFOAM-SOEL 2018)

Year	Surfaces of organic agriculture, 1000 ha*						Surfaces with Organic grapes, 1000 ha	
	World	**Romania**	France	Italy	Spain	Germany	World**	**Romania*** **
2005	31512.45	**92.8**	550.5	1067	622.8	807.4	101.26	-
2006	32303.02	**108.3**	552.8	1148	736.9	825.5	113.97	-
2007	33419.78	**131.9**	557.1	1150	804.9	865.3	122.42	-
2008	36461.17	**139.6**	583.3	1002	1129.8	907.8	150.75	-
2009	38719.03	**167.9**	676.4	1106	1330.8	947.1	190.45	-
2010	37196.76	**183.0**	845.4	1114	1434	990.7	217.95	**0.89**
2011	38463.65	**230.0**	971.8	1097	1625	1015.6	264.71	**0.84**
2012	39535.44	**288.3**	1029.5	1167.4	1756.6	1034	284.23	**1.65**
2013	37967.9	**301.1**	1061	1317	1610.1	1045	312.58	**1.98**
2014	47234.56	**289.3**	1119	1388	1663.2	1048	311.87	**2.09**
2015	52898.59	**245.9**	1323	1493	1968.5	1088.8	332.91	**2.16**
2016	65251.44	**226.3**	1537	1796	2018.8	1135.5	379.55	**2.02**

* FAOSTAT; ** FIBL-IFOAM-SOEL survey 2006-2018 (FIBL & IFOAM – ORGANICS INTERNATIONAL, The world of organic agriculture; statistics and emerging trends 2018, https://shop.fibl.org/CHen/mwdownloads/download/link/id/1093/?ref=1)
*** Ministry of Agriculture and Rural Development, 2018

MATERIALS AND METHODS

Although the SWOT analysis was first used for developing management strategies for companies, it has also been used in research to develop political strategies (Azubuike, et al., 2018; Liu et al., 2018), financial strategies (Gottfried et al., 2018), environmental strategies (Fertel et al., 2013; Pesonen and Horn, 2014) and so on, thus being possible to be extended to evaluate the competitive position of an entire field, as it is the case of organic wine.

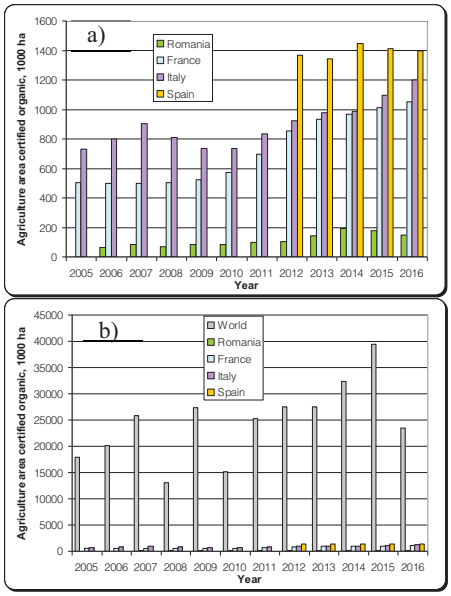

Fig. 1. Total agriculture area certified organic for Romania as compared to representative EU countries (a) and world (b)

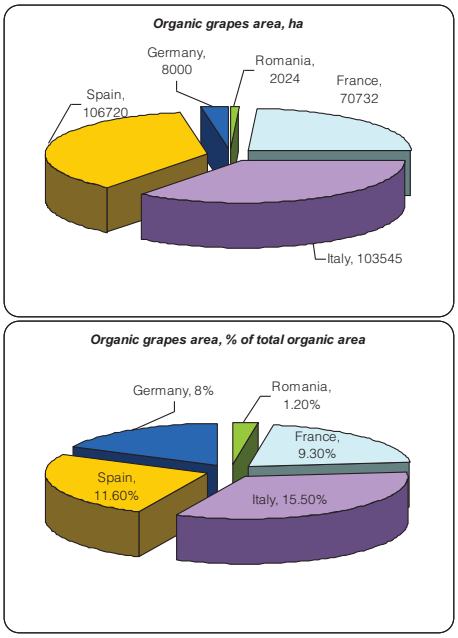

Fig. 2. Surfaces cultivated in 2016 with organic grapes and their proportion of the total organic area are presented for Romania and certain representative EU countries (data from FAOSTAT)

SWOT analysis is actually a tool developed to help decision makers to formulate strategies by taking into account the interactions between internal (strengths, weaknesses) and external (opportunities, threats) factors. However, SWOT analysis can provide guidance only in a specific, limited context, as whether something is a strength or a weakness depends highly on the background (Bell and Rochford, 2016).
Several reports and scientific papers were used to evaluate the past and present situation in the organic grapes and wine field, taking into account a multitude of influencing factors.

RESULTS AND DISCUSSIONS

The SWOT analysis has taken into account the main issues related to organic vine and wine production, pointing out some new or changed relevant aspects, listed and explained below.

1. Strengths

- Legislation supports and enforces the *avoidance of anorganic fertilisers and plant protection synthetic substances.* Before 1940s, when pesticides started to spread (Daly et al., 1998) and legislation for their used appeared for their regulation, the crops and wines were produced in the way we consider it today as being organic. After a so called "golden period of pesticides", when their use spread and was very appreciated, the movement towards more sustainable approaches has started. As a result, around 1970s some organic wines were already produced in Europe and USA (Jones and Grandjean, 2017). At present the regulations on organic production (EC 889/2008; EC 834/2007) are very clear on type of products to be used or prohibited. Dosage of certain products are closely supervised and reduced wherever possible. Thus, *the dosage of copper*, a controversial fungicide widespread in organic farming, especially because it accumulates in soils, will be further reduced, as in the end of 2018 the European Commission revised its usage (Viti Veille, 2019) and decided that the authorised doses in viticulture should be lowered from 6 to 4 kg/ha/year (average of 7 years).
- *Preservation of soil quality* is one of the major objectives of organic farming. Döring et al. reviewed in 2015 the results of several previous researches, concluding that for various types of crops the soil organically farmed is of higher quality, preserves a higher content of

organic matter, has more biological activity, is less eroded and has lower bulk density. Even though it does not directly apply to grape growing, it is worth mentioning that in the legislation the hydroponic culture is not considered organic, as it is done without soil.

- Organic farming, including viticulture, supports the *preservation of animal life*, while *no GMO is allowed*. It is able to *reduce the CO_2 footprint*, by *reduction of external inputs*.
- The new legislation introduces *clear lists of substances and practices allowed and forbidden in organic winemaking*. With the new, more clear regulations, it is more easily understandable that *several treatments are not allowed* such as: addition of sorbic acid or sorbate, ammonium sulphate, ammonium bisulphite; acidification with malic acid; use of carboxymethylcellulose, polyvinylpolypyrrolidone, co-polymer PVI/PVP, potassium ferrocyanide, calcium phytate, heat treatment and so on. These treatments are permitted in conventional winemaking, for certain desired effects in the wine, mostly for chemical and microbiological stabilisation.
- Recognising the role of several interventions on the final quality of wine, the organic legislation allows many important treatments applied also in conventional winemaking.
- In 2018 more beneficial inputs, some from the list of the substances forbidden, have been sent for approval for application in organic wine (Document C(2018)6828), thus amending the present regulations on organic products (Regulation EC 889/2008). These new inputs include yeast autolysates, inactivated dry yeasts, potato protein, yeast protein extracts, chitosan from Aspergillus niger and yeast mannoproteins (Viti Veille, 2019).
- With the *approval in EU of the usage of sulphur dioxide as an antioxidant and antimicrobial*, the organic wines will have longer shelf lives, with more stable aroma and less oxidation. A long debate around SO_2, has driven some consumers away from wine, even though it is used in many other products in even higher quantities and despite the fact that the practice has very old roots, fumigation by burning sulphur rods being documented from antiquity (Antoce and Namolosanu, 2001). Its consistent use began for fruit conservation in 1950s (Green, 1976).
- The low sulfur dioxide concentrations may be also beneficial for extracting in wines more bioactive compounds good for human health, such as resveratrol, caffeic acid and quercetine (Gabriele et al., 2018).
- The addition of reasonable doses of SO_2 is also beneficial for preserving aroma. The presence of SO_2 creates in the wines the aromatic profile the consumer is already used to, as it is demonstrated that in the absence of SO_2 the flavours evolve differently. Because of this legislative permission, the number of organic wines on the market is bound to increase and winemakers may be more willing to get into the production of organic wines.
- The *new policies* are more and more recognising and supporting the consumer demand for more environmentally friendly farming practices, for products with a specific identity, perceived as more closer to nature and healthier for both environment and people.
- *Financial incentives* for producers increased in recent years. For example, the new Common Agricultural Policy (CAP) (2014-2020) recognises the overall significant contribution of organic farms to environmental protection and therefore includes in the first pillar a green direct payment, without asking these farms to fulfil any further obligations.

2. Weaknesses

- *Unclear terminology exists in different countries***.** Terms like organic, biological, ecological are used for products obtained through same or similar practices in accordance to the specific country. Other terms, such biodynamic (from 1920s), sustainable, natural, wine without sulphites etc. further complicate things. Moreover, in order for a wine to be legally certified as biodynamic (respecting the holistic approach proposed by Rudolf Steiner and certified by Demeter) it should be first certified as organic. The term "organic" (used mostly in English-speaking countries) is confusing itself, as its main meaning is "relating to or derived from living matter" or "containing the chemical element carbon". The term "biologic" (used mostly in French-speaking countries) is even more confusing, when having in mind the main meaning of the word. Legally, in the USA, to label a wine as "*sulphite free"* it should contain no more than

10 mg/l total sulphites, while a "*no added sulphite*" wine should be produced with no sulphites added. *Biodynamic wines* are the most intriguing of the organic wines as the influence of celestial bodies and of some biodynamic preparations have any effects or benefits, little effects being observed on vine growth and yield (Döring et al., 2015). For "*natural wine"* no legal definition is yet available, the expectations being that they are made with minimal interventions. In the EU there is already a proposal to legally define the "*nature*" wines. For the regulation of these wines organic certification may be required, while some more practices acceptable in organic wines are discussed to be banned, among which filtration, fining, usage of selected yeasts selected or even cold fermentation. The term "*natural*" is debatable too, as it induces the idea that other wines may not be natural, even though they are obtained from the fermentation of a natural fruit (Viti Veille, 2019). All these lead to *unclear communication of different practices that makes a product to be called organic*.

- *Legislation is evolving too slowly and still includes inconsistent aspects in several countries.* For organic wines, *the most controversial practice is by far the addition of sulphites*, thus, much debate was always around this topic. In USA, within the framework of past and present legislation, there is a clear distinction from organic wines and wines produced from organic grapes, as the first cannot have any added sulphites, while the latter can. In European countries, for many years there was no specific legislation for organic wines, thus wines produced from organic grapes was the only option, under the general regulation for organic production (EC 834/2007, now repealed and replaced by EU 848/2018). In 2009 European Commission proposed to introduce organic wine regulation, but an agreement regarding the content of sulphites could not be reached. Only in 2012 a specific implementing regulation of organic wine was passed (EU 203/2012), laying down detailed rules for the implementation of the organic products Council Regulation EC 834/2007. Other related regulations were also in force at one point or another, but they are not mentioned here for the reason of simplification and clarity. The present European legislation allows the use of sulphites, the levels permitted being in accordance to the type of wines and level of sugar present in the wines. Thus, for organic certification, *wines produced from organic grapes* can have the sulphur dioxide content of a maximum 100 mg/l in red wines with a residual sugar under 2 g/l and maximum 150 mg/l in white and rosé wines with a residual sugar under 2 g/l. For the rest of the wines (with sugar levels above 2 g/l) the sulphur dioxide content should be reduced by 30 mg/l as compared to the levels permitted in non-organic wines belonging to the same category. These levels of SO_2 represent the total sulphites, added and naturally produced in wines. For trade purpose, in accordance to the equivalence arrangement between EU and USA (2012), organic wine exports must respect the winemaking and labelling rules of the destination market. The regulations in the USA are much stricter as regards the SO_2, *thus EU organic wines, containing sulphites can only be traded in USA as "made with organic grapes", while wines produced in USA from organic grapes, as they do not contain added sulphites, can be traded in EU as "organic wines"*. There is no need for separate certifications, but those obtained by the organic winemaker in its own country. Concerning the trade of organic products, several other countries, such as Argentina, Australia, Canada, Chile, Costa Rica, India, Israel, Japan, Tunisia, Republic of Korea, New Zealand and Switzerland are referred to as 'equivalent' countries (European Commission, Trade in organics, Importing organic produce, accessed in 2019).

Table 3 contains limits for SO_2 permitted in various countries and under various production systems in accordance to their legislation or standards, such as Demeter standards.

Table 3 Limits for SO_2 content in wines of various countries

Country	**Maximal limit of SO_2 in organic wines (mg/l)**	**Maximal limit of SO_2 in biodynamic wines (mg/l)**	**Maximal limit of SO_2 in conventional wines (mg/l)**
EU Member States	100 mg/l red wine with less than 2 g/l sugar 150 mg/l white and rosé wines with less than 2 g/l sugar 130 mg/l red wine with more than 2 g/l sugar 180 mg/l white and rosé wines with more than 2 g/l sugar	110 mg/l red wine with less than 5 g/l sugar 140 mg/l white, rosé and sparkling wines with less than 5 g/l sugar 140 mg/l red wine with more than 5 g/l sugar 180 mg/l white, rosé and sparkling wines with more than 5 g/l sugar 360 mg/l sweet wines with Botrytis, 250 sweet wines without Botrytis	150 mg/l red wine 200 mg/l white and rosé 200 mg/l red wine with more than 5 g/l sugar 250 mg/l white and rosé wines with more than 5 g/l sugar 300 mg/l for some exceptions listed in EU regulation 606/2009
USA	No addition of SO_2 allowed, up to 10 mg/l naturally occurring sulfites	100 mg/l measured at bottling	350 mg/l measured at bottling
Australia	120 mg/l may differ for red and white wine (in accordance to certification bodies)		250 ppm in dry wine, 300 ppm in wines with sugars higher than 35g/l
New Zealand	100 mg/l red wine 150 mg/l white wines		250 ppm in wines with sugars less than 35 g/l, 400 ppm in wines with sugars higher than 35 g/l
South Africa	90 mg/l red wine 100 mg/l white wines		150 mg/l red wine with less than 5 g/l sugar 160 mg/l white and rosé with less than 5 g/l sugar 200 mg/l wines with more than 5 g/l sugar 300 mg/l wines from noble late harvest
Chile	75 mg/l red wine 100 mg/l white wines		250 ppm in dry wine, 400 ppm in wines with sugars higher than 30 g/l
Argentina	70 mg/l red wine 100 mg/l white wines		130 mg/l red wine with less 4 g/l sugar 180 mg/l white and rosé with less 4 g/l sugar 180 mg/l red wine with more than 4 g/l sugar 210 mg/l white and rosé wines with more than 4 g/l sugar 300 mg/l for some

- *Labelling*. Organic or not, any wine containing more than 10 mg/l sulphur dioxide must be labelled as "*contains sulphites*" or "*contains sulphur dioxide*". This requirement become mandatory in EU from 2005 (Graham, 2016). In 2007 the European Commission introduced Directive 2007/68 which added further allergenic ingredients to the labelling requirements. As a result, after the adoption of wine labelling regulations (EC) No: 607/2009, in June 2012, in spite of vocal objections from the industry, it also became compulsory to declare the presence of milk and\or egg residues in wine, if they exceeded the prescribed level, which is at present 0.25 mg/l.

- *Certification* is sometimes even more confusing. It was intended to assure the consumers that the products were really obtained thorough certain practices, but the different logos, types of certifications and claims added more to the confusion.

- *Conforming to all the restrictions is challenging for the producers*. As compared to other simpler organic foods (fruits, vegetables, honey, tea), organic wine had to comply to both organic production of the raw materials (grapes, yeast, enzymes etc.) and organic processing. Any intervention not approved by organic regulations leads to losing the right to label as organic. These many restrictions can cause some disadvantage to the producers as

compared to their competitors in conventional wine business and sometimes can be perceived as unfair. This is especially true for the restrictions regarding herbicides in the vineyards and limitations of sulphur dioxide in the wine.

- On the other hand, *some producers self-impose more restrictions than legally required*. The expression of "terroir" is viewed by many organic wine producers as non-interventional, thus letting the fermentation to progress as nature intended it. The aroma developed in the final wine by the microorganisms present in the specific environment is indeed part of the specific "terroir", but it is not always appreciated by the consumers.

- *Organic wine has a low market share*. Of the total wine, only 3-5% is marketed as organic. With the new generations more aware of the environmental movement, there is however hope that the market will grow fast (Newhart, 2019). However, to increase the production, first an increase in conversion from conventional to organic vineyard should be realized. As it can be seen in Table 4, everywhere in the world, the surfaces covered with organic vineyards are only a few percentages from the total surface covered with vine.

Table 4 Surface covered in 2015/2016 with organic vineyards (% of the total vine surface)

Country/Region	% of organic vine of the total vine*
Europe	8.5%
(in Romania 1.3% of the total vineyards; 2.5% of the noble vine vineyards)	
New Zealand	7%
USA	4.1%
Chile	3%
South Africa	2%
Argentina	2%

*The Diva Network, https://divawine.com/overview-organic-market/

- *Consumer expectations for organic product vary*. Most consumers understand the term "organic" as basically referring to protection of human health, by producing grapes and wines without any use of synthetic herbicides, pesticides and fertilisers, while the more subtle implications for the plant or the environment are mostly ignored.

3. Opportunities

- Organic winemaking enjoys the largest recognition so far. *It has spread worldwide* from the EU to USA, Chile, South Africa, Australia, Japan, all these countries having in place established standards for organic winemaking. The new legislation on organic wines *clarifies the issue of "wine from organic grapes"*. Before, this terms did not cover the processes involved in winemaking, thus, the wine itself could have been produced by obeying the rules for either type of winemaking - organic or conventional. Now, a "wine from organic grapes" is one that was conventionally vinified, otherwise it would have been an "organic wine".

- Winemaking practices have gained in precision and the *processes are easier to keep under control*. Increase in hygiene in winemaking allows for reduction of SO_2 by at least 50 mg/l compared to the maximum values permitted for conventional wines. With modern equipment and carefully monitored processes, even conventional wines do not need to go this far to reach the maximum level of accepted SO_2. Water management has also evolved very much.

- *There are regions more favourable for organic growing than others*, and science and tradition can show where the chances are higher to obtain constant quality products. In some regions, including in some parts of Romania (Artem et al., 2014) the pressure for diseases is lower, thus it is more easier to grow vine organically. In dry climates the number of treatments for plant protection is lower even than those applied conventionally, which makes it easier to go for organic there. Where the conditions are favourable (Cazacu et al. 2008), the organic vine should be extended.

- *Organic products are more accessible and popular*. In accordance to an AC Nelson study in the USA consumers spend more on organic products than before, thus an increase of 9.5% was recorded in 2018 as compared to 2017. The trend was valid for consumers of all ages, with certain trends for age groups. Millennials spent over 14% more on organic products, followed by Generation X with 9.5% increase, while boomers spent only 7.2% more (Nielsen Homescan, 2018 vs. year-ago). Thus, in spite of some set-backs, *the production and demand are growing*.

- *Quality of the organic wines improved and could be demonstrated in blind tastings*. More and more organic wines participate in

international wine contests and they are awarded medals in competition with any other types of wines. Some recent examples are presented in Table 5.

Table 5 Entries and medals for organic wines in important wine competitions (CMB-Concours Mondial de Bruxelles and BWT - Berliner Wein Trophy)

	CMB 2019 entries	CMB 2018 entries/ medals	BWT 2017 entries	BWT 2018 entries	BWT 2019 entries
Italy	182	184/57	85	91	109
Spain	151	110/40	100	91	
France	121	138/35	15	23	36
China	53	101/27			
Germany	2	3/0	52	41	72
Greece	9	37/10	25	46	25
Moldova	6	24/8			
Portugal	22	11/4	2	3	
Romania	3	8/2			
Other countries	63	44/20	17	6	29
No. of countries	24	24	12	10	17
Total organic wine samples	636	660	296	301	369
Total organic wine medals	To be judged	199	93 (72 gold; 21 silver)	82 (65 gold; 17 silver)	90 (79 gold; 11 silver)
Total samples in the contest			6067	6381	7253

As expected, the majority of organic entries come from countries where organic viticulture is most developed: Italy, Spain, France and Germany. Recognizing this market development, CMB introduced a new category dedicated to organic and biodynamic wines, the "Organic Wine Trophy", which was awarded for the first time in 2017. Believing in the significance of the organic and biodynamic wines the management of CMB expect this trend to continue, receiving numerous entries in this category.

Scientific studies were also performed. A 2016 UCLA study showed that eco-certified wine (wine made with grapes from organic and biodynamic farms) obtained higher scores in professional blind tasting evaluations than regular wines. On a standardized 100-point scale, eco-certified wines scored an average of 4.1 points higher. The authors analyzed reviews and scores for 74,148 Californian wines produced in between 1998 and 2009 and included in magazines Wine Advocate, Wine Enthusiast and Wine Spectator and took into account personal variation of the tasters, thus introducing a standardized scale which was controlled for differences between easy graders versus hard graders. Aside of the fact that generally the eco-certified wines seem to taste better, as they are also often cheaper, the choice for these types of wines is bound to increase. The study is however incomplete, as it only included wines made with organic/biodynamic grapes (Magali et al., 2016).

- Consumers themselves are more open for *wines with different aroma than the mainstream conventional wines*.
- *Increased communication regarding environmental issues can lead to development of the market for organic wines*. It was found that consumers with high awareness and strong pro-environmental attitudes have the highest expenditure share for organic wine, as well as for other sustainable products (Schäufele and Hamm, 2018).
- *The new generations are more interested in "green" life*, with some countries more interested than others. There is a global increase in the *movement towards sustainability*. In an increasingly globalized 21st century world, organic wine had become a potent symbol of localized place and culture strongly tied to tradition (Jones and Grandjean, 2018). Famous wine companies, such as Domaine Romanee-Conti from Burgundy, France, one of the highly-regarded for its wine quality, converted recently all its vineyards to biodynamic cultivation. Other famous Bordeaux domains, such as Château Falfas, are applying biodynamic principles for years.
- *Consumer perception is changing*: A study on French, Italian and Spanish consumers (Vecchioa et al, 2017) shows that there is generally *a positive perception about the health effects of wine*. As far as organic wines are concerned, the same study showed that eco-labeled wines are indeed perceived as being healthier than conventional ones, but only by French and Spanish consumers with high environmental awareness. Thus, in agreement with Jourjon and Symoneaux (2012), taking into account the increase in the competitiveness in the wine sector and the increase in consumers' interest in environmental issues, wines with an environmental label might have an economic advantage. On the other hand, those who are more involved into wine do not think that an eco-labelled wine is better for health than a wine without any certification (Vecchioa et al, 2017). An USA survey showed

that consumers who attributed the most health benefits to wine were the ones most likely to drink more and pay more for wine, if it were health enhanced (Higgins and Llanos, 2015).
- Logos too are conveying more than before the immediate information regarding the belonging to the organic product category. There are famous logos outside of EU, such as JAS Japan, Canada, USDA organic.

4. Threats

- *Climate issues may prevent the development of an efficient organic grape production in some regions*, wet microclimates being less favourable for controlling fungal diseases. *Global climate change* may also play a significant role.
- *The costs are roughly 15-20% higher than in case of conventional cultivation*. The costs with substances for plant protection are less than using conventional pesticides, but the costs of labor is higher, as more persons are needed for working with vines and the soil. Also, lower densities in the organic/biodynamic vineyards contribute also to increasing the costs.
- *The higher price is a major limiting factor with multiple implications*. Even though the consumers recognise the value for the environment of the organic foods, they are not willing to pay the extra cost needed to produce these. As wine price is also a marker of quality, bonus prices of organic wines are perceived differently by consumers in accordance to the market segment. In a German study it was found that in the low-price category, organic wines were valued highest, prices being perceived as extremely high for organic wine. However, in the high-price (premium) segment price was perceived as a quality signal for both organic and conventional wine as well (Schäufele and Hamm, 2018). Consumers are interested in sustainability and environment protection, but attach even more importance on hedonic characteristics of products. Thus, in spite of the interest observed in several studies, when it comes to buying intention of organic wines, the behaviour does not show commitment to pay a bonus price for environment protection or for sustaining financially the producers of organic wines. For low income consumers especially the price of organic wine is still a barrier, in spite of the positive attitudes towards environment (Schäufele and Hamm, 2018).
- *Organic wines are rarely recognized as having higher sensory quality*. When organic winemaking emerged the results were not very much appreciated by the consumers, as the prices were high, yet the products were far from being perceived as premium wines. This negative reputation of organic wines proved difficult to overcome (Jones and Grandjean, 2017) and still persists on some markets, in spite of the obvious progress. Organic wines obtain awards in wine contests, but most in special categories dedicated to organic wines. To date, the limited market for organic wines has settled around prices of 5-10 Euro/bottle, most of the wines being sold very young. Still, there are organic wines that can be allowed to age even for 20-30 years, provided they hold a good acidity and the quality of grapes at harvest was high. This is especially valid for wines produced from grapes harvested at over-ripening and ice-wines.
- *Organic wines are not perceived as belonging in the premium wine category or related to terroir.* They are considered mainstream commodities. Thus, when selecting a wine knowledgeable wine consumers, go to the shelves with wines from a certain region, not to the organic wines category. Sometimes, advertising an eco-label can be perceived as a sign of lower quality. A study published by Delmas and Lessem (2017) showed that only when the price is lower consumers tend to prefer eco-labelled wines over otherwise identical conventional ones, mostly because of the belief that the wine is produced in lower quality wine regions. Wine consumers prefer conventional, more expensive wine, if they are coming from famous high-quality regions. Based on this behaviour, the authors concluded that an eco-label may work to the disadvantage of wines, as consumers tend to interpret this eco-labelling as a sign of lower quality. (Delmas and Lessem, 2017).
- *Scientific evidence is scarce regarding the benefits of consuming organic wines. Research could not consistently demonstrate that organic wines have higher nutritional value. No studies have reliably proven they are healthier.* On the contrary, the main results point to nutritional qualities not different than in conventional

products, even though the different inputs lead to differences in metabolic pathways and accumulation of matter in the fruits. As consumers tend to interpret "organic" as producing a benefit for their private health rather than being beneficial for the environment, many studies tried to pin-point the advantageous changes in the chemical composition of the products. However, the results are inconsistent, as each grape variety can behave differently in a different microclimate. For example, our results obtained in Murfatlar region, Romania, showed that aside of the fact that large variations were induced by the year of production, higher concentration of beneficial polyphenols and aroma were obtained in Feteasca neagra grown conventionally rather than organically (Antoce and Cojocaru, 2018), while Cabernet Sauvignon is of better quality if produced organically (Artem and Antoce, 2018). A study performed in Italy (Micelli et al., 2003) on 15 different red wine varieties of various levels of quality (table wine, Controlled Denomination of Origin wines) found that organic wines had significantly higher concentrations of polyphenols. As compared to the average of 2148 mg/l total polyphenols in DOC wines, an organic wine reached a concentration of 2540 mg/l. Resveratrol concentrations were higher in organic wines, averaging 1.69 mg/l, while DOC and table wines averaged 1.16 and 1.18 mg/l, respectively. Regarding the total antioxidant activity table wines had about 50% less than organic and DOC wines. Surprisingly, for the wines studied, the organic wines had the lowest ochratoxin contamination, their average being 0.14 µg/l while the DOC wines averaged 0.45 µg/ and the table wines 0.38 µg/l. This last result was attributed to the reduction of fungal infections due to lower nitrogen levels in organic farming and also on the higher concentration of the antioxidants in fruits (Micelli et al., 2003). Another study performed in Germany (Döring et al., 2015) showed that growth and yield of grapevines cultivated under organic and biodynamic systems decreased in comparison to the integrated treatment, but the grape quality was not significantly affected by the management system. In yet another study of 2015 Garaguso and Nardini showed that total polyphenols and flavonoids concentrations were not influenced by organic winemaking, the content being similar in conventional and organic red wines produced without sulfites addition. The antioxidant activity too was similar in organic and conventional red wines. Actually, the study showed that polyphenols and flavonoids content were slightly higher in organic wines as compared to conventional wines, but the differences were not statistically significant. It is expected that the polypehnol content is more related to the weather conditions of the year, rather than the culture technologies, as a study on organic and conventional onions has also shown (Ren et al., 2017).

- *Not many consumers are interested in lower levels of sulphur dioxide in wines*, especially when this is associated with lower quality. A survey on 223 consumers recruited in a liquor store investigated perceptions on wines with sulfites and willingness to pay for non-sulfited wines. The study results from a model of purchase intentions showed that quality and price are most important, while differentiating labels such as "no sulfite added", "organic", played only a marginal role. Generally, consumers seemed not interested to give up quality for low sulfite content. Only the sub-group of consumers who also reported getting headaches after drinking wine are receptive to low-sulfite wine marketing, as they tend to attribute the headaches to sulfites (Costanigro et al., 2014).

- *Certification requirements are highly bureaucratic and costly*. Many organic-minded producers chose to apply organic farming principles for the sake of the land and vine protection, without any certification. Others gave up certification (not the organic practices) after a while, after they noticed there was no significant difference in sales. Furthermore, those who produce organic grapes for their intrinsic quality, are not always turning them into organic wines, as the winemaking process imposes a supplementary certification. In USA the production of organic wines is particularly harder, as there it is not allowed to use sulfites and wines cannot contain more than 10 mg/l of naturally produced sulfites. Famous winemakers (such as Tony Cotturi in Cotturi Winery) consider organic farming the mean for the production of great wines, and wine quality

is that which convinces the consumer, not the organic logo on the label (Gleason, 2019).

- *Big companies are not particularly interested in organic wine production*, thus, coming mostly from small producers, the organic wines have limited and regional availability. For example Ernest & Julio Gallo, the biggest wine producing company in the world, with almost 3% of the world's wines (The Wine Gallery, 2019), is at present certified "sustainable" for some of its vineyards and wineries (by California Sustainable Winegrowing Alliance), but "sustainable" is not as strict as "organic", having no restriction for addition of sulfites.

CONCLUSION

The SWOT analysis shows that new legislation and policies confer good prospects for the expansion of organic wine production and sales. In this international trend, Romania too can benefit if proper measures are taken swiftly in order to catch up with more advanced countries.

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