

DOES THE SUSTAINABILITY PERCEPTION DEPEND ON THE *TERROIR*?

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Abstract

The main scope of this research has been to investigate what values are attributed to the concept of “sustainability” by the wine producers of two different wine territories of Piedmont; the *terroir* of the Barolo DOCG and the *terroir* of the Gavi DOCG. The research wants to emphasize how much the characteristic elements of each *terroir* influence the perception of the concept of sustainability among producers.

In the present work, sustainability has been assessed under three criteria:

- environmental (choice of farming techniques for the vineyard, adoption of environmental certifications and best practices, defence of vineyard biodiversity and landscape preservation);
- socio-economic (type of business conduction, type of work contracts, forms of remuneration for the grapes, relations with professional associations).
- productive (estimate of emissions generated during the production processes and, in the case of the carbon footprint, during the product’s life cycle).

The inquiry has been conducted through *face to face* interviews with members of a selected group of wine firms, wine cooperatives and other producers located in the investigated territories with the objective of evaluating the existence between their distinct categories of relevant differences in the perception and interpretation of the concept of sustainability.

The processing of the obtained data has noticed the coexistence of different forms of judgment and sensitivity toward the analysed subject. At the same time it has been observed a non homogeneous perception of the value of “sustainability” in the different fields investigated due to the lack of an univocal definition of the same concept of “sustainability” in the wine sector.

In the *terroir* of Barolo DOCG, a traditional productive area of certified wines, there is a certain quota of producers who can be identified as “sustainable” without a clear awareness on their part. In the *terroir* of Gavi DOCG, on the other hand, it seems that sustainability is experienced with more attention due especially to the precise strategy of some producers oriented to the concept of sustainability for reasons of company and market policy.

Therefore “sustainability” could be influenced effectively by the territorial context in which the producer operates and could substantially reinforce both the image of Piedmontese wines and their *terroir* of production, intercepting that growing segment of final consumers who uses the attributes related to the sustainability of a wine as a discriminating element of their purchasing choice.

Keywords: *Barolo, Gavi, Terroir, Sustainability*

1 INTRODUCTION

To describe the concept of sustainability perception in this article we analyzed the three areas of sustainability as defined by the “ Social Development World Summit” (Copenhagen, 1995) and by the “ Conference on the compatible development” (Stockholm, 1972): environmental, economic and social sustainability. The concept of sustainability in economic processes involves the ability to sustain over time the reproduction of environmental, economic and social capital used; this is also true in wine sector.

In particular, in areas historically suited for viticulture the concept of sustainability is related to the characteristic values of the terroir of production. This research explores how the sustainability issues in two typical wine-growing areas of Southern Piedmont (Barolo and Gavi hills area) are influenced by their terroir. Those wines have been chosen because because the grapes from which they are obtained come from two different small productive areas of Piedmont. Barolo and Gavi DOCG can be respectively produced only in 12 and 11 municipalities in the south of Piedmont. The surfaces grown are comparable (respectively about 2000 ha and 1500 ha) but the two areas are very different among themselves in history, varieties of vines grown, wines produced and climate. Both wines have relevant export quotas, mainly in geographical areas where consumers' attention to sustainable productions is ever and ever growing.

In Italy there are no mandatory guidelines for sustainable behavior in the wine field, but some experimental projects based on voluntary membership are taking place. The aim of this research is to define the sustainability areas and the related sustainable actions moving from the model developed by the "Wine Institute and the California Association of Winegrape Growers (CAWG) according to the" California Code of Sustainable Winegrowing Workbook ".

Regarding environmental sustainability, normally understood as a distinctive element of the territory which must ensure the protection and renewal of resources used we have investigated the following areas:

- vineyard: varietal selection, trellis material, soil management, mechanical use in vineyard, management of phytosanitary treatments, fertilizers and herbicides management, grapes healthiness;
- water and energy: water supply, energy supply;
- waste and by-products: management of the vineyard and winery by-products, wastewater disposal and solid waste disposal;
- ecosystem: vegetal biodiversity, animal biodiversity management, landscape preservation, aquatic water habitat maintenance.

With regard to socio-economic sustainability - defined as the ability of territorial systems to produce and maintain in the territory an added value by using local products and resources efficiently and to ensure well-being (safety, education, fair income) and strong relationships between all the actors of the local communities - we have investigated:

- cellar: choices of winemaking techniques, choice of additives and processing aids, bottling, packaging materials, logistics and warehouse management :
- socio-economic area : staffing and recruiting strategy, continuing education training, neighbor and community relations, equitable production factors remuneration, equitable final product remuneration.

2 MATERIALS AND METHODS

The research was conducted by interviewing a sample of producers in the two investigated areas, Barolo and Gavi in the late spring of 2014.

Sample consists of 23 wineries producing Barolo and 16 producers of Gavi.

The companies surveyed were given a face to face questionnaire. That questionnaire is semi- structured with closed questions and open- ended questions and is organized in three sections.

The first section regards farms productive structure, their consumption of: water, electricity, gasoline and mineral nitrogen, values useful in order to calculate the carbon footprint of individual companies. In the first section four open-ended questions asked the interviewees an opinion on sustainable wine, sustainable vineyard, sustainable cellar, and sustainable trade in wine market.

The second part investigated 6 areas sensitive to sustainability: vineyard, winery, energy management and electricity, by-products and waste, impacts on the ecosystem, impacts on the socio-economic system. For each area have been proposed some of the actions considered "sustainable" according to the guidelines of the "California Code of Sustainable Winegrowing Workbook". The respondents were asked to provide a judgement in a likert scale(1.Strongly disagree, 2. Disagree, 3. Neither agree nor disagree, 4. Agree, 5. Strongly agree) of how the proposed action adhered with their own perception of "sustainability". For every action suggested respondents were asked if they had already implemented actions or if they planned any implementation. The third and last section, structured with open-ended questions, analyzed the effects that sustainability has on terroir.

The responses obtained were used to compare if and how the perception of sustainability varies in the two investigated areas, and how the perception is affected by the terroir.

3 RESULTS AND DISCUSSION

In the present paper we discuss the section of the questionnaire regarding to the perception of sustainability declared by Gavi and Barolo producers.

As can be seen from table 1 the average, the standard deviation and the coefficient of variation were calculated for each action of the two terroirs.

In the vineyard area the highest average ratings (> 4) were assigned to phytosanitary treatments management, fertilizers and herbicides management, grapes healthiness from both the producers groups; Barolo producers attribute also an high score to soil management.

An analysis for each sustainable framework allows to better observe the differences in the perception of sustainability in both terroirs. In the vineyard scope there is no significant difference between the two terroirs, the ratings are higher for both actions regarding the use of pesticides, fertilizers, herbicides and techniques to ensure field fruit maturity. In this context, the lowest scores are respectively in Barolo for trellis material, and in Gavi area for grape variety choice.

In the Cellar area strong differences between the two areas are evident. Gavi producers are more sensitive to winemaking techniques, bottling and choice of additives and processing aids. Both areas have a low sensibility to logistics and warehouse management sustainability, a possible explanation could be that the average size of companies is small.

Table 1 – Sustainable actions and scores obtained in the two terroirs (Mean, standard deviation, variation coefficient)

Action	Barolo			Gavi		
	Mean	Standard deviation	Variation coefficient	Mean	Standard deviation	Variation coefficient
Environmental due diligence for new vineyard or replanting	3,55	1,20	0,34	3,75	1,44	0,38
Varietal selection	3,67	1,18	0,32	3,13	1,41	0,45
Trellis material	2,94	1,02	0,35	3,75	1,03	0,27
Soil management	4,19	1,03	0,25	3,88	0,86	0,22
Mechanical use in vineyard	3,67	0,98	0,27	3,38	0,93	0,27
Management phytosanitary treatments	4,58	0,72	0,16	4,44	0,86	0,19
Management of fertilizers and herbicides	4,34	1,02	0,23	4,38	0,93	0,21
Grapes healthiness	4,39	0,88	0,20	4,31	1,31	0,30
Winemaking techniques	3,27	1,05	0,32	4,13	0,99	0,24
Additives and processing aids	3,21	1,28	0,40	3,94	0,97	0,25
Bottling	2,96	1,02	0,35	3,81	0,88	0,23
Packaging materials	3,43	1,21	0,35	3,06	1,09	0,36
Logistics and warehouse management	2,51	1,07	0,42	2,88	1,27	0,44
Water supply	3,93	0,94	0,24	3,65	0,98	0,27
Energy supply	4,05	1,02	0,25	3,75	1,09	0,29
Management of the vineyard and winery by-products	3,77	0,97	0,26	3,94	0,75	0,19
Waste water disposal	3,95	0,72	0,18	4,13	0,93	0,22
Solid waste disposal	4,31	0,70	0,16	4,19	1,01	0,24
Field border management	3,71	1,08	0,29	4,38	0,78	0,18
Vegetal biodiversity management	3,71	1,03	0,28	3,50	1,22	0,35
Animal biodiversity management	3,66	1,04	0,28	3,44	1,58	0,46
Landscape preservation	4,52	0,59	0,13	4,69	0,46	0,10
Acquatic habitats maintenance (river, wetland)	4,50	0,66	0,15	4,63	0,48	0,10
Staffing and recruiting strategy	3,35	1,28	0,38	3,69	1,21	0,33
Continuing education training	3,95	0,92	0,23	4,56	0,70	0,15
Neighbor and community relations	3,94	1,05	0,27	3,63	1,22	0,34
Equitable production factors remuneration	3,41	1,05	0,31	3,06	1,30	0,42
Equitable final product remuneration	3,88	1,04	0,27	3,25	1,44	0,44

"Water and Energy" area is a very sensitive sustainability topic for both areas with ranks close to or above 4, both for water supply and for electrical energy management. This is due to the large spread in both areas of forms of electricity generation using photovoltaic panels; as regards the water management the presence of water wells in most of the wineries explains the attention to the use of this resource.

The by-products and wastes are another field where the two areas have similar trends with high grades near or above 4 especially with regard to the solid waste management most of the wineries are organized in form of integrate collection management by the municipalities where are located. With regard to the waste water disposal the majority of companies have implemented systems for the collection and disposal.

The scope ecosystem doesn't present significant differences between the two areas; the maintenance of the territory is the basis for terroir creation and it is an intangible value of the wines produced. The highest ratings are assigned in fact to the preservation of the landscape and the maintenance of the surface water that are one of visible elements that most influence the terroir. A difference between the areas occurs in the field border management which is perceived as more relevant in Gavi.

Even in the socio-economic area the evaluations are similar in the two areas, this is due to the fact that the socio-economic aspect (intangible traditions and man work) together with physical environment and landscape represent the essential skills for terroir constitution. Greater attention is found in Gavi employee training while in Barolo is given more importance to equitable remuneration of production factors and the equitable final product remuneration.

4 CONCLUSION

From the research emerges that the terroir is strongly connected to the concept of sustainability. The attention to terroir influences the sustainable choices of the producers in the two studied areas and the sustainable actions implemented influence the terroir.

In terms of awareness shown to the three pillars of sustainability the most sensitive in relation of terroir is the environmental one; the high score given to landscape maintenance and to environmentally friendly practices in the vineyards show in both the terroirs analyzed producers' natural inclination for the sustainable management of wine production.

In Gavi terroir where a quota of producers became winemaker recently there is strong attention to the sustainable practices in the cellar while in Barolo where wine-making techniques tend to be more traditional.

Great attention is given to the water and energy management thanks to the deployment of photovoltaic in order to reduce the impact of productive activities.

Also high importance is given to socio-economic area, this impact directly on the terroir because influences the traditions of work in the vineyard and the society that lives in the area.

The preservation of terroir can be measured with the attention that is given to equitable production factors remuneration and to final product equitable remuneration. The equitable remuneration can be considered the factor that justifies the focus on sustainability and ultimately to maintain the terroir.