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Keywords
sustainability, wine, certification, Italy, sensory, taste, VIVA, consumers,

Research Question
The objective was to evaluate the sensory consumer perception towards the increasing sustainability information for a wine product.

Methods
A survey including an acceptability test of three samples of wine was carried out among 69 subjects, aged between 18 and 30, the so-called Millennial Generation.

Results
The information on sustainability did not affect sensory perception, for neither appearance and smell, taste and overall acceptability.

Abstract
Introduction

Since the '90s the wine sector has experienced significant changes. From one side, consumers worldwide are growing, however in the traditional wine countries consumption has decreased. The wine-making industry has become strongly competitive worldwide, and consumers might choose a broader range of wines (Bianchi, 2015). However, wine is known as to be a difficult product to be evaluated by consumers and wine sector is exposed to information asymmetry problems. Wine is essentially considered an experience good (Nelson, 1970) for which the quality, especially the sensory quality, can be assessed by the consumer only when he really tastes the product. Research background has shown how the most important factors that influence consumers' wine purchasing decisions are both attributes of the product (taste, colour, region of origin, brand), wine knowledge and experience, and personal characteristics of the individuals.
At the same time, there has been a worldwide growing interest in sustainable food production and consumption (Vermeir and Verbeke, 2008). However, in recent years other winemaking standards and guidelines wishing to recall better the concept of sustainability have spread, both in Italy and abroad. Products that contribute to economic, social and environmental sustainable development through their attributes (i.e. organic products) or the consequences of their production processes (i.e. Fair Trade products) are called ethical products and have become more and more popular. It has been studied that ecolabels can influence the consumer quality perception (Delmas et al., 2016). Some studies have even shown that some consumers are confused by the system of environmentally friendly label and are doubtful about "green" claims (Forbes et al. 2009).

In the last years Pomarici and Vecchio (2013) have been studied the Italian sustainable wine market through elicit willingness to pay (wtp) using experimental auctions, investing consumer's knowledge and preferences for different sustainable wine labelling programmes. However, to our knowledge, little has been done in the Italian contest to explore whether the sustainability information about wines can influence the sensory perception (e.g. taste, aspect, flavors).
In specific, the objective of this work was to evaluate the sensory consumer perception towards a sustainable wine using an acceptability sensory test. In particular, it has been studied the effect of increasing information about wine sustainability on its sensory perception.

Method

A survey including an acceptability test was carried out among 69 subjects (aged between 18 and 30, the so-called Millennial Generation) which consume wine at least once per week. We chose this target of sample because Millennials consumers have seen a growing interest in new wine attributes, such as environmental, social and ethical sustainability (Pomarici and Vecchio, 2013).
A sparkling white wine produced following technical specification of "VIVA Sustainability and Culture" (Malvasia DOC – Denomination of Origin, Piacenza, Italy) was evaluated in the present study. VIVA "VIVA Sustainability and Culture" is a project that arises from the collaboration to the Ministry for the Environment, Land and Sea, OPERA (Research Centre for Sustainable Agriculture, Università Cattolica del Sacro Cuore Piacenza) and Agroinnova (Centre of Competence, University of Turin).
The participants were recruited among students at the Department of Food Science of the University of Parma. An acceptability test was performed for different attributes: appearance, smell, taste and overall acceptability using a 9-point scale anchored at the extremes with "Extremely disliked" (left of the scale) and "Extremely liked" (right of the scale). Judges received three glasses containing 20 ml of the same wine consequently presented (with a sensory evaluation format for each sample) with A, B and C code, and served at 10°C. An increasing sustainability information was given as written message onto the sensory evaluation format: A sample was presented as "white wine"; B as a sustainable wine and C as a sustainable wine plus other information concerning the meaning of a sustainable production. The information about sustainability given to the participants included the meaning and the indicators used by the companies to assess their production actions (Air, Water, Territory and Vineyard).
At the end of the sensory test, subjects have filled a questionnaire assembled to obtain information about their sustainability consuming habits, perception, knowledge and trustiness. A t-students's test ($p \leq 0.05$) was used to verify statistical significance among wine samples with increasing sustainability information, considering different sub groups based on several variables (e.g. gender, consuming frequency and sustainability knowledge).

Results
Based on statistical differences among different wine samples, the increasing sustainability information did not affect sensory perception, for neither appearance and smell, taste and overall acceptability. Wine scores judged samples on average as "neither good nor bad" for all attributes (6 average point).
More than half of subjects (58%) declares they consume sustainable products less than once a week or never; subjects do not trust (≈30%) in a sustainability certification and state that the sustainability certification is not as important as other factors during the wine purchase.
Moreover, knowledge about sustainability results confusing, since ≈ 63% of subjects related the meaning of a sustainability in the wine sector to the organic certification.
When asked the relation between sustainability production and sensory quality, about half of respondents declares that sustainability means higher sensory characteristics. However, during the sensory test, respondents were not influenced by the sustainability information given.

Conclusions
The effect of wine sustainability information on sensory perception was studied using an acceptability test on a sparkling Italian wine (Malvasia DOC). Sensory evaluation of the wine object of this study was not affected by the increasing sustainability information considering different consumer categories, indicating that consumer was not interested/affected by the sustainability issue.
Some limitations of this study occurs, in particular the sustainability information was provided by a written message on the sensory evaluation format, that, in some cases, could not be read carefully or misinterpret by the participants.

Therefore, the authors are carrying out further analysis to assess whether other sensory evaluation methodologies can provide additional information about the link between the communication of sustainability and the consumer sensory perception of a wine.
However, the importance of sensory attributes might be relevant to the positive creation of image of a wine labelled and communicated as sustainable.
Therefore, it becomes important to assessing how these criteria can be scientifically measured and tailored (with different techniques) to benefit wineries in communicating the sustainable wine issue in the marketing process.

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TITLE: **Sustainability and its influence on sensory perception: a case study in the wine industry**

Introduction

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