IVES Technical Reviews vine & wine

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Wines made from resistant grape varieties already have their place in the market

Sourced from scientific article « Resistant grape varieties and market acceptance : an evaluation based on experimental economics » (OENO One, 2018)[2].

>>> Varieties resistant to fungal diseases of the vine bring high hopes for a reduction in the use of plant protection products. They would appear to be a credible alternative to traditional grape varieties, given that the resulting wines should find buyers on the market according to a study published by researchers from the Institut des Sciences de la Vigne et du Vin (Université de Bordeaux, France). <<<

Resistant varieties, especially the latest generation, bring high hopes for a reduction in the use of plant protection products[1]. However, they will only be a credible alternative to traditional grape varieties if: (i) their resistance is long lasting; and (ii) the resulting wines find their place in the market. To answer the second point, researchers from the Institut des Sciences de la Vigne et du Vin (Université de Bordeaux) have carried out a study proposing a methodology for evaluating consumer expectations and trade-offs based on experimental economics[2]. This involved gathering data on willingness to pay (WTP)[3] for bottles of wine given different information configurations, in a controlled laboratory experiment and guaranteeing the credibility of WTP disclosures by using disclosure incentive methods[4] to answer two general questions:

- What is a consumer's WTP for a wine from a resistant grape variety, considering its organoleptic quality, compared to the WTP for conventional wines from the same production region and at the same price level?
- What effect does information on environmental and health performance have on the willingness to pay for resistant variety wines and on consumer price-quality trade-offs?

To do this, the study took place in four steps. First, consumers assessed four wines (see the "choice of wines" box) after tasting and with a minimum level of information (the same for each wine) on the region of origin and the vintage (step 1). Next, data on the environmental and health performance of the production methods for the different wines was gradually provided to the consumers, in the following order:

Treatment Frequency Indicator (TFI), to measure the intensity of the use of plant protection products during production (step 2).

Type of viticulture (step 3), with definition of the following terms:

- Conventional wine, involving the use of plant protection products, both synthetic and of natural origin, in compliance with the regulations.
- Organic wine, involving only the use of plant protection products of natural origin[5].
- Resistant variety wine, produced from a varietal innovation: a new variety, not traditionally grown in the production region, but resistant to vine diseases and allowing greatly reduced use of plant protection products.

Presence or absence of residues from various pesticides applied in the vineyard[6] (step 4).

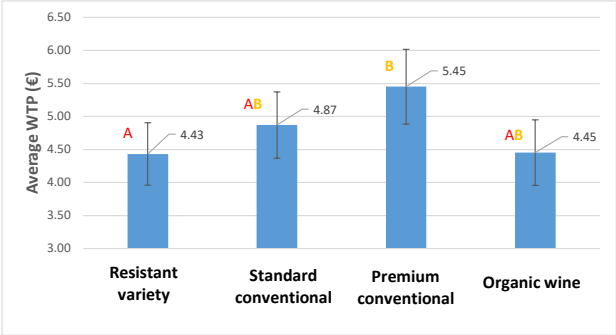


Figure 1. Average WTPs at step 1 (confidence intervals 95 %). Two products share the same letter (e.g. "A") if and only if they have not been valued significantly differently by all of the group (ANOVA, post-hoc Tukey tests, threshold 3 %).

At the minimum level of information, the premium wine ranked significantly higher

While the differences between the hedonic scores (sensory preferences) awarded to the four wines were not significant (results not presented in this article), the WTP evaluation shows that on blind tasting (step 1) the premium wine was significantly more highly valued by consumers than the resistant variety wine (Figure 1). This first step also showed that the selection of wines was appropriate, since consumers did not reject any of them outright, while being perfectly able to note differences between them.

Once information was provided on production methods and other environmental indicators, the game changed completely

The successive steps on the environmental and health performance of the production methods for the different

Choice of wines: 2016 Languedoc whites

- A resistant variety wine (Bouquet 3159[7] grape variety, partially resistant to mildew and totally resistant to powdery mildew), produced at the Inra Pech Rouge experimental site in 2016, available for sale and optimized in terms of quality (bottle selling price: € 6.00 ex-cellars at the time of the experiment).
- A standard conventional wine, produced at the same property under the Aude Protected Geographical Indication, with very similar characteristics to the resistant wine (€ 4.70).
- A premium conventional wine from the Languedoc appellation (€ 8.90).
- A certified organic wine from the same production region (€ 8.00).

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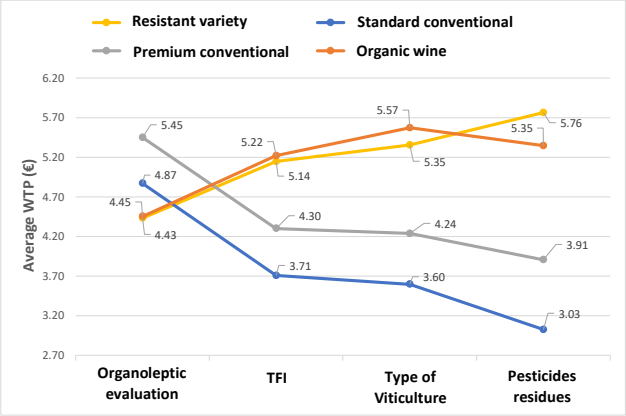


Figure 2. Average WTP per wine and evaluation step.

wines completely reversed the average preferences of the consumer group and put the organic and resistant wines in the top places, whereas they were ranked 3rd and 4th in the first step.

It should be noted that providing information on the presence or absence of pesticide residues reversed the order of preference between these last two wines in the final step. Information on the presence of copper residues for the organic wine caused a slight drop in its WTP.

Market shares changed significantly in favor of the resistant variety wine

However, a higher WTP for a product does not guarantee that it will be preferred to others at the time of purchase; everything depends on the sales price. This is why it is important to calculate the consumer surplus, i.e. the difference between the maximum the consumer is willing to pay for a product (WTP) and the sales price of the product in question, and which applies uniformly to all consumers. It can be considered that a consumer buys the product that gives the maximum surplus (the concept is close to that of "best value for money"). For each participant, therefore, the wine that would potentially be purchased at each step in the experiment could be determined. By counting the number of times a wine would be purchased, it is then possible to calculate its market share at each step (Figure 3).

In step 1, the standard conventional wine was very strongly preferred (73 % of market share, Figure 3). It can be seen that premium wine represents only 8 % of market share even though it has the highest WTP. The organic and resistant variety wines were given very similar WTPs but with

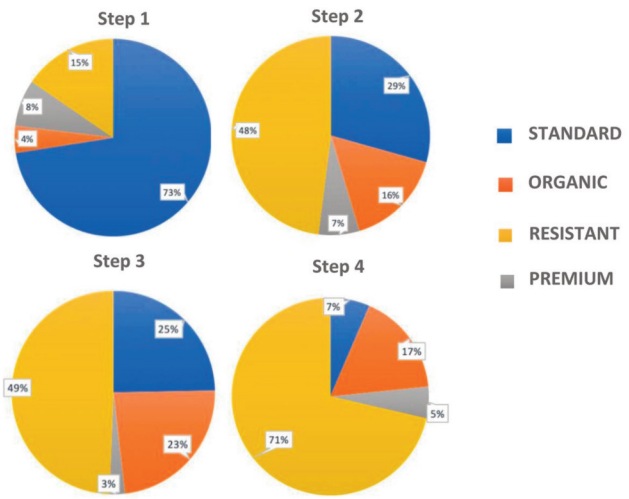


Figure 3. Market shares (%) for the 4 wines for each step.

Consumer selection criteria

The selection of consumers for the study was carried out by a specialist recruitment agency. The following filters were applied:

- Equal distribution between men and women.
- Uniform age distribution, only targeting adults.
- Representative of all socio-professional categories.
- Consumers who buy wine at least once a week.
- Consumers of dry white wine at least twice a month.
- No one involved in the wine-production sector.

quite different market shares (4 % for the organic wine and 15 % for the resistant variety wine). Market shares then changed significantly as more information was provided, in favor of the resistant variety wine, far ahead of the organic wine which nevertheless had a similar average WTP.

In the end, this study provides a forward-looking demonstration of the growing requirement from consumers for environmental and health performance of wines offered on the market. The result has been demonstrated using the specific regional example of Languedoc wines, and in the context of the prominence given to information on TFIs and pesticide residues, as well as to production methods and the use of a non-traditional grape variety (for the resistant variety wine). Nevertheless, there was no measure of market acceptance in relation to the use of this innovation. The fact remains that these wines lag behind in terms of organoleptic quality, and to become firmly established on the market (i.e. to encourage repeat purchase) it will be necessary to continue the efforts being made in this direction. ■

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1 Merdinoglu, D., Schneider, C., Prado, E., Wiedemann-Merdinoglu, S., & Mestre, P. (2018). Breeding for durable resistance to downy and powdery mildew in grapevine. *OENO One*, 52(3), 203-209. doi: 10.20870/oeno-one.2018.52.3.2116

2 Fuentes Espinoza, A., Hubert, A., Raineau, Y., Franc, C., & Giraud-Héraud, É. (2018). Resistant grape varieties and market acceptance: an evaluation based on experimental economics. *OENO One*, 52(3). doi: 10.20870/oeno-one.2018.52.3.2316

3 The maximum price at or below which a given consumer will buy a product or service.

4 Combris, P., Giraud-Héraud É, & Pinto A. (2015). "Relative willingness to pay and surplus comparison mechanism in experimental auctions." Cahiers du GREThA, n° 2015-20, June. http://gretha.u-bordeaux.fr/fr/cahiers-du-gretha

5 No further details were given on the notion of organic wine, in particular the potential reduction in the use of sulfites. The aim was to focus on reduced use of pesticides in the vineyard.

6 Analyses carried out by researchers from the Unité œnologie de l'Institut des Sciences de la Vigne et du Vin (ISVV), Université de Bordeaux (France) and the Instituto de Investigación y Análisis Alimentario (IIAA) de la Universidad de Santiago de Compostela (USC), Spain.

7 Salmon, J.-M., Ojeda, H., & Escudier, J.-L. (2018). Disease resistant grapevine varieties and quality: the case of Bouquet varieties. *OENO One*, 52(3), 225-230. doi: 10.20870/oeno-one.2018.52.3.2139