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Wine labelling with the list of ingredients: context, consumer's perception and future challenges

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Since 2011, Regulation (EU) No 1169/2011 on the provision of food information to consumers (FIC) exempted alcoholic beverages above 1.2 % abv from the mandatory list of ingredients and the nutrition declaration. In 2017, the European Commission invited the alcohol beverages industry to respond to consumers' expectations and to present, within a year, a proposal of self-regulation on ingredients and nutritional information covering the whole sector.

Therefore, on 12 March 2018, the European associations representing the alcoholic beverages (wine, spirits, beer, and cider), presented to European Health Commissioner Andriukaitis a self-regulation proposal to provide consumers clear information about the ingredients and nutritional content of alcohol beverages. The part of the Self-regulation common to all alcohol beverages included the use of e-labels for the communication of some of the information. This was complemented by a specific sectorial annex that contains proposals regarding the process and modalities for its implementation.
Conscious of the difficulty of implementing self-regulation in the wine sector, the wine and aromatized wine sectors proposed to European legislators to include specific provisions on nutritional declaration and ingredients listing in the regulation on the Common Market Organization (CMO) for wine and in the European Union (EU) regulation for aromatized wine products during the Common Agriculture Policy (CAP) reform.
On December 2021, the European Commission published Regulation (EU) 2021/2117 amending wine and aromatized wine products labelling rules by, among other things, making mandatory the communication of the list of ingredients and the nutrition declaration for these products. For the first time ever in the area of food and drink labelling, this information could be given on-line by electronic means under certain conditions.
After a transitional period of 2 years, these new rules will apply from December 2023 to all alcohol beverages present on the European market.

A global topic

As in the European Union, the consumer is asking for transparency and information worldwide, leading many countries to consider new labelling rules for ingredient listing and nutritional declarations for alcohol beverages; the topic is therefore global. This is particularly evidenced by the increasing number of articles and blogs relating to the naturality of wines, winemaking additives and their impact on the consumer and the environment.

In this context, this article will first clarify some definitions, and then present the results of a survey carried out for Oenoppia on the consumer perceptions of wine labelling in regard to ingredients; finally, it will discuss an action plan to help professionals in the wine sector take ownership of this theme and assist consumers in their understanding.

1. Some definitions

To understand what an ingredient, an additive or a processing aid is, it is important to recall the reference definitions of these concepts.

1.1. International level

Ingredient, food additive and processing aid are defined in the General Standard for the Labelling of Prepackaged Foods of the Codex Alimentarius (CXS 1-1985), which has been widely adopted in national regulations in the field of labelling of prepackaged foodstuffs. Thus:

- **Ingredient** means "any substance, including a food additive, used in the manufacture or preparation of a food and present in the final product although possibly in a modified form."
- **Food Additive** means "any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result, (directly or indirectly) in it or its by-products becoming a component of or otherwise affecting the characteristics of such foods. The term does not include "contaminants" or substances added to food for maintaining or improving nutritional qualities."
- **Processing Aid** means "a substance or material, not including apparatus or utensils, and not consumed as a food ingredient by itself, intentionally used in the processing of raw materials, foods or its ingredients, to fulfil a certain technological purpose during treatment or processing and which may result in the non- intentional but unavoidable presence of residues or derivatives in the final product."

In the OIV International Code of Oenological Practices (resolution OIV-OENO 567A-2016), the definitions from the Codex Alimentarius have also been taken up, thus confirming their international applicability to products in the wine sector.
The OIV, through its "Safety and Health" Commission, also carries out evaluations on processing aids and additives proposed for products and beverages from or derived from vine and wine.

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1.2. European level

The definition of an ingredient used by the EU in Regulation (EU) No 1169/2011 is also in line with that of CODEX Alimentarius, with one precision: the European definition specifies that flavorings and food enzymes are explicitly considered as ingredients, in the same way as additives, and that residues are not considered as ingredients. Therefore, the mandatory labelling of ingredients will only concern substances meeting this definition.

Nevertheless, the EU clarifies that it is not necessary to indicate on the list of ingredients additives and enzymes used as processing aids unless being a substance causing allergies or intolerances which can still be present in the final product.

In the EU, food additives and processing aids are strictly regulated to protect the health of the consumer. Before being authorized, additives must be evaluated by the European Food Safety Authority (EFSA) and, on this basis, the European Commission maintains a positive list of authorized additives with an assigned number, indicating the foods in which they may be added and the maximum doses to be used. Only listed additives may be added to foodstuffs. Authorized substances are periodically re-evaluated by the scientific authorities, considering scientific and technological developments. When an authorized additive is classified unsafe, it is removed from the positive list.

An additive is authorized only if no public health concern has been identified at the levels authorized, but proof of safety in use is not sufficient for a substance to be approved: there must also be demonstrated value. Thus, food additives are only approved if their technological usefulness can be demonstrated, and their use is not likely to deceive the consumer.

Each additive and processing aid generally presents one or more functionalities. In general, additives are intended to improve nutritional and health quality, organoleptic properties (appearance, taste), good preservation (stabilization), in as an adjunct to, or substitute for physical processes (heat, cold, etc.). Processing aids are used to improve or optimize winemaking processes, as clarification or stabilization.

2. Substances concerned by the future consumer's information rules

In the wine sector, the OIV International Code of oenological practices currently describes 99 substances recognized as acceptable for use in winemaking, specifying their conditions of use and their classification as food additives or processing aids according to technological function (antioxidant, preservative, acidity regulator, stabilizer, antioxidant, sequestrant, fermentation activator, clarifying agent, anti-foaming agent, enzyme) and analysis of their presence or otherwise in the finished product. Among these substances, only 22 are classified as food additives and are therefore potentially caught by the ingredient labelling requirement.

The European regulation adheres very closely to the OIV recommendations, except for 3 permitted winemaking additives not contained in the European Regulation (EU) 2019/934[1]: glutathione, erythorbic acid and sorbic acid. Two oenological products are still in discussion: DMDC (dimethyl dicarbonate), which is not yet classified by the OIV but is considered as a food additive by both Codex Alimentarius and the European Union, and tannins for which the classification is still in progress at OIV and European levels.

Thus, to date, 21 additives are authorized by the EU for use in winemaking (see Table 1).

3. State of the art

Although ingredient labelling for wine has been discussed for a decade, especially at the European level, the bibliography concerning consumer perceptions is limited. However, a PhD thesis recently conducted at Geisenheim University has led to the publication of 3 articles targeted first on German wine producers and then on consumers from 3 countries (Germany, Italy, and Australia). According to the author, ingredient labelling will cause wine to lose its image as a natural product. Some consumers would prefer wines with a shorter ingredients list, impacting the winemakers' selection of oenological practices, although most would not reject wine with a label mentioning nutritional values and ingredients (Pabst *et al.*, 2019a[2] and 2019b[3]).

TABLE 1. Additives used in oenology and main role associated.

Oenological products *		Role	Classified by OIV	Authorized in EU (EU) 934/2019
Glutathione	CAS 70-18-8	antioxidant	yes	no
L-ascorbic acid	INS 300	preservative	yes	yes
Erythorbic acid	INS 315	preservative	yes	no
Sulfur dioxide	INS 220	preservative	yes	yes
Potassium hydrogen sulfite	INS 228	preservative	yes	yes
Potassium sulfite anhydrous	INS 224	preservative	yes	yes
Ammonium hydrogen sulfite	CAS 10192-30-0	preservative	yes	yes
Sorbic acid	INS 200	preservative	yes	no
Potassium sorbate	INS 202	preservative	yes	yes
Lysozyme	INS 1105	preservative	yes	yes
Dimethyldicarbonate (DMDC)	INS 242	preservative	*in discussion*	yes
Citric acid	INS 330	acidity regulator	yes	yes
Malic acid (D,L-; L-)	INS 296	acidity regulator	yes	yes
Lactic acid	INS 270	acidity regulator	yes	yes
Tartaric acid L(+)	INS 334	acidity regulator	yes	yes
Calcium sulfate *(liqueur wines only)*	INS 516	acidity regulator	yes	yes
Arabic gum	INS 414	stabilizer	yes	yes
Metatartaric acid	INS 353	stabilizer	yes	yes
Yeast mannoproteins	-	stabilizer	yes	yes
Carboxymethylcellulose	INS 466	stabilizer	yes	yes
Potassium polyaspartate	INS 456	stabilizer	yes	yes
Fumaric acid	INS 297	stabilizer	yes	yes
Tannins	INS 181	stabilizer	*in discussion*	*in discussion*
Caramel *(special wines only)*	INS 150a, 150b, 150c, 150d	other	yes	yes

* Additives appearing in boldface are related to part 4.4 of the article.

Further work has also shown that information given with ingredient labelling is useful in Italy, while German and Australian respondents are not receptive to it. Moreover, the effect that media coverage can have on consumers perception on the use of ingredients in winemaking has also been considered, presenting them two short newspaper-like articles focused on either positive or negative effects of ingredients on wine quality and shelf life: negative media information leads to the higher importance of the ingredient list whereas positive or no media coverage doesn't. In conclusion, the author indicates that the wine sector should actively inform consumers about the need for ingredients in wine production (Pabst *et al.*, 2021[4]).

In a proactive approach, Oenoppia therefore decided to build upon these limited observations by conducting a more substantial study. An initial survey was undertaken in 2020 among all employees of the companies belonging to the association. Despite the assumed bias of this panel, which had at least some knowledge about winemaking and oenological products, the conclusions corroborated the existing publications. A significant portion of the respondents considered that they were not sufficiently informed about how wine was made, and that labelling should give more information on the substances used to produce the wine.

Thus, it appeared relevant to extend this study to obtain a more detailed and complete understanding of consumer perceptions of wine ingredients at a global level and to clarify how to provide useful and necessary supplementary information. The results of this research are presented in the remainder of this article.

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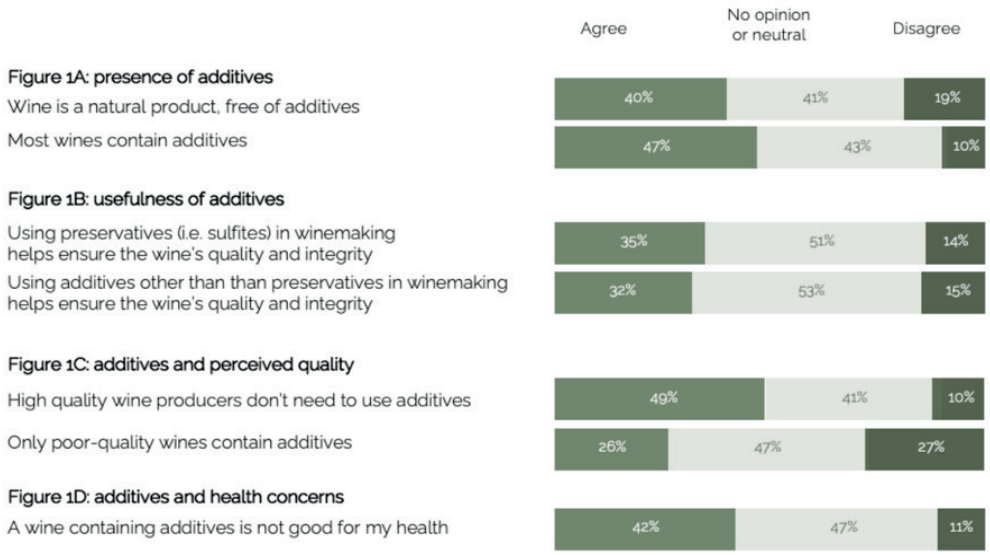


FIGURE 1. Knowledge of winemaking and perceived quality.

4. Consumer's perception survey

Carried out through Wine Intelligence, a company specializing in wine consumer research and insights, the survey was undertaken in ten countries with more significant numbers of wine consumers: Germany, France, Spain, Italy, United Kingdom, Sweden, Russia, Japan, Australia, and United States. 11,533 people (men and women) evenly distributed among the ten countries, in different age groups and consuming wine at least once a month were surveyed, leading to a representativeness of 262 million wine consumers.

The objectives of this survey were the assessment of knowledge and perception of winemaking, the assessment of the impact of labelling with a list of ingredients on the image and the intent to buy a known and liked wine and then an unknown wine, the acceptability of the list of ingredients according to its length, and finally the level of acceptability of specific ingredients. The survey was conducted online via sets of statements and questions associated with a gradual approval scale. The results presented below summarize the data mainly based on the average of the ten targeted markets[5]. The complete results of the study are available as supplementary data (only in English).

4.1. Additives and winemaking

The first part of this survey sought to assess consumers' knowledge of winemaking practices and their perception of the use of additives. The results are shown in Figure 1A: more than a third of respondents (40 %) considered wine as a natural product free of any additives, while almost half (47 %) admitted that most wines contain additives. Only a minority (10 %) believed that wine doesn't contain additives. These results corroborate the overall perception related to the naturalness of wine, but it is also interesting to highlight the important part of the panel which remained neutral, without opinion on the subject (more than 40 %).

The questionnaire then focused on the usefulness of additives to help ensure the wine's integrity and quality. As shown in Figure 1B, nearly a third of the panel (32 to 35 %) recognized the usefulness of these additives (sulfites or other compounds), while only 15 % disagreed with this claim. The majority (more than 50 % of people) remained neutral and didn't have a clear opinion on this point.

Finally, the relationship between quality and additives was also discussed (Figure 1C): almost half of the consumers considered that producers of high-quality wines don't need to use additives, 41 % have no opinion on this and only 10 % disagreed with this finding. However, although these results tend to dissociate high-quality wines from additives, only a quarter of respondents (26 %) believed that only low-quality wines contain additives, while a similar percentage (27 %) thought the opposite. If we add to this observation the share of the panel which remained neutral on the subject (47 %), the question is far from being settled.

4.2. Perceived quality and health

Another part of the survey raised the question of possible health concerns linked to the use of additives (Figure 1D): 42 % of people considered that a wine containing additives is not good for health, while only 11 % thought the opposite. Considering the strong concern of consumers regarding the potential impact of additives on their health, both in the food industry and cosmetic sectors for example, this result is not surprising. Once again, almost half (47 %) didn't have a definite opinion on the subject.

4.3. Impact of labelling on the image of the wine

The second part of this survey compared three scenarios (Figure 2): the first corresponded to the current situation (required by regulation in most parts of the world), with the mention of "contains sulfites" on the label; the second consisted of a product with a short list of ingredients and the third one of a product with a long ingredients list. Each scenario was presented to a third of the panel and the questions focused on the impact of the ingredient list on the image and purchase intent for the wine. This analysis was first carried out by asking the consumer to think about a wine he/she knows and likes; the same analysis was then reproduced for another wine, unknown by the consumer.

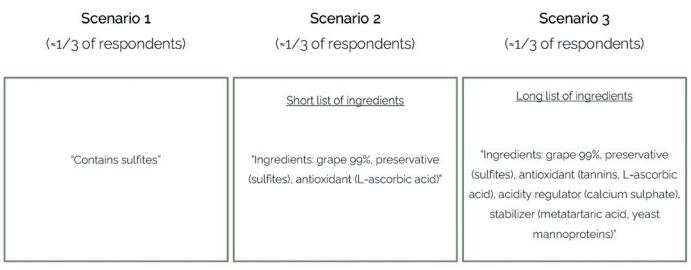


FIGURE 2. Proposals for back-labels.

4.3.1. Known and liked wine

Looking at the average impact of these scenarios for a well-known and liked wine, almost half of the respondents (46 %) remain undecided: labelling doesn't change their opinion on the wine, and almost two-thirds (62 %) would probably buy the wine again (Figure 3A). Ingredient labelling gives a lower opinion of wine for only 19 % of the panel and only one in ten consumers would probably no longer buy the wine. In addition, when comparing the three scenarios (Figure 3B), there is a better acceptability of a short list of ingredients compared to the other two options. Intent to buy significantly increases in the same direction.

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Figure 3A: average of the 3 scenarios

	✓ It doesn't change much/at all my opinion	~ Unsure (neutral or don't know)	× It gives me a lower opinion of the wine
Opinion about the wine	46%	35%	19%
	✓ I would still buy the wine	~ Unsure (neutral or don't know)	× I would not buy it again
Intent to buy	62%	26%	12%

Figure 3B: comparison of the 3 scenarios

	Average ✓	Scenario 1 Contains sulfites	Scenario 2 Short list	Scenario 3 Long list
% No, it doesn't change my opinion much / at all	46%	42%	51%	45%
% I would probably / definitely buy it again	62%	58%	67%	62%

Significantly higher / lower than average across the 3 scenarios (confidence interval: 95%)

FIGURE 3. Impact of ingredient labelling for a known and liked wine.

The impact of this labelling on the image of the wine was also evaluated (results not presented) and revealed that the most negative impact would be related to the perceived quality and the reliability of the brand, to an extent inversely proportional to the length of the list of ingredients. The longer the list, the lower the perceived quality of the wine.

4.3.2. Unknown wine

The same trends were observed when the consumer was confronted with the choice of an unknown wine: transparency linked to the information displayed with an ingredient list would tend to reassure the consumer, leading to better acceptability and higher consideration to buy (Figure 4); this is particularly true for markets such as France and Australia, and to a lesser extent Spain and United Kingdom, while Italy and Japan would tend to reject a wine with a list of ingredients, whatever its content.

These results were obtained for still wines (red and white) but were also observed for sparkling wines (results not presented): providing information on the wine composition reassured the consumer.

	I would consider / strongly consider buying the wine		
	Contains sulfites	Short list	Long list
Average all markets	47%	+2 pts	-1 pt
France	37%	+8 pts	+7 tps
Australia	47%	+5 pts	+6 pts
Spain	51%	+9 pts	+1 pt
United Kingdom	52%	+5 pts	+2 pts
Germany	48%	-1 pt	+1 pt
United States	53%	+1 pt	-1 pt
Sweden	45%	+1 pt	-3 pts
Russia	37%	+2 pts	-5 pts
Italy	50%	-2 pts	-5 pts
Japan	46%	-7 pts	-11 pts

Significantly higher / lower than "contains sulfites" (confidence interval: 95%)

FIGURE 4. Impact of ingredient labelling for a wine unknown to the participant.

4.4. Acceptability of additives

The last part of this study consisted in assessing the level of acceptance of specific additives by presenting participants with a "raw list" containing simply the name of the substance (see Table 1, additives in bold) and then dividing it into two sub-lists, associating the name of each product with its role production the wine: "better preserve the wine" or "better maintain the quality of the wine" (stabilizers and acidity regulators).

As shown in Figure 5, a quarter of respondents (28 % on average, all markets combined) would buy a wine with ingredients from the raw list while 10 to 15 % would probably not buy it (13 % on average). Most consumers (59 % on average) would be between uncertainty and hesitation about this purchase. The analysis of market behavior is also interesting: Anglo-Saxon markets such as United Kingdom, Australia and United States have the highest acceptability of ingredients (up to 33 % in net score) while a significant rejection is noted in Italy, Spain, Russia, and Germany.

When looking at the specific perception of each additive (results not presented), it appears that without information on the role of ingredients, acids and tannins would be the most accepted, in most countries; those with more "chemical-sounding" names would be the least accepted, except for Anglo-Saxon countries, which were less assertive in their position.

Acceptability would tend to increase and rejection to decrease when additives are associated with a brief explanation of their role; this is clearly demonstrated for preservatives (L-ascorbic acid, potassium sorbate, dimethyldicarbonate).

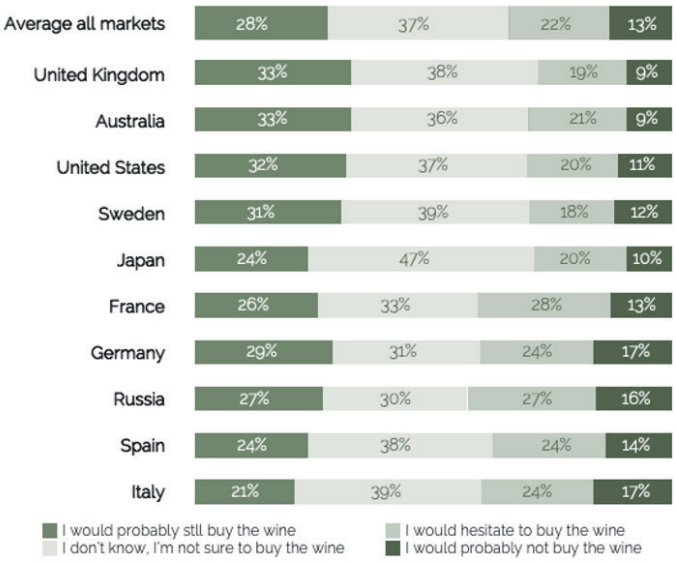


FIGURE 5. Intent to buy of a wine containing additives (see Table 1).

5. Conclusions

While less than one in five consumers are have somewhat negative perceptions about the use of additives in winemaking, the main idea emerging from this study is the uncertainty of the consumer. The results obtained have highlighted a real lack of information on winemaking and on the composition of wines, and the few elements provided to justify their use tend to demonstrate that giving information on additives would contribute to their acceptance. Transparency would therefore be effective in overcoming some mistrust or negative perception.

It is also clear that a short list of ingredients is preferable to a long list. While the short one has a neutral - even positive - impact on the consideration of purchase and on the image of the wine, the long one is associated rather with the perception of a lack of quality of the wine. A reasoned choice regarding the oenological practices to be used should therefore be taken into consideration. Reassuring consumers about the quality of the wine and the safety of the additives used is also crucial.

The results presented suggest that consumers would be more inclined to accept rather than reject most ingredients, considering also that those with "chemical sounding" names are less likely to be accepted. Justifying the role of an ingredient would also promote a significant increase in its acceptance.

6. Perspectives

This study opens of the way for concrete actions to support the sector in the choice of oenological practices to be used and the associated labelling.

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On the one hand, regarding the background: considering consumers' lack of knowledge on the subject, the construction and provision of a complete and objective argument on the origin of the ingredients and their usefulness during winemaking is a key point. This should primarily target wine technicians (oenologists and other professionals) to enable them to justify their winemaking processes and to explain the usefulness of the additives in winemaking to consumers.

On the other hand, the form should not be neglected: professionals in the European sector have been pioneers in developing a digital platform enabling consumers to access e-labels via a QR code (www.U-LABEL.com), but addition of information on the origin, the role and the safety of the additives will still need to be provided as an accompaniment to the use of this tool. In addition, the global market will have to be considered to achieve an international integration of labelling, for which the OIV is conducting an in-depth reflection.

To this end, a working group consisting of the main players in the wine sector at international level* (producers of oenological products, oenologists, professional associations, and international organizations) has recently been launched to consider a concrete action plan and a substantiated communication on wine labelling. This article will form the basis of their future work. ■

* *This working group is constituted of representatives of several organizations: International Association of Oenological Products and Practices (OENOPPIA), European Committee of Wine Enterprises (CEEV), International Union of Oenologists (UIOE) and International Organization of Vine and Wine (OIV)*[6].

Sources : *Sourced from «Revue Française d'Oenologie n°308». Original language of the article: English.*

1 Regulation (EU) 2019/934 (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0934&qid=1643377971346&from=EN) is amended by Regulation (EU) 2022/68 (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R0068&qid=1643378012318&from=EN), taking into account the OIV resolutions adopted between 2019 and 2021.

2 Pabst E., Szolnoki G. & Loose S. (2019). The effects of mandatory ingredient and nutritional labelling for wine on consumers – a qualitative consumer study. Wine economics and Policy, 8(1), 5-15.

3 Pabst E., Szolnoki G. & Loose S. (2019). How will mandatory nutrition and ingredient labelling affect the wine industry? A quantitative study of producers' perspectives. Wine economics and Policy, 8(2), 103-113.

4 Pabst E., Corsi A.M., Vecchio R., Annunziata A. & Loose S. (2021). Consumers' reactions to nutrition and ingredient labelling for wine - A cross-country discrete choice experiment. Appetite, 156.

5 Revue Française d'Oenologie n°308 - technical leaflet.

6 This document does not engage OIV in any way; only some members of the OIV secretariat contributed their expertise to this work.

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