

ANALYSIS OF REGULATORY FRAMEWORK AND STANDARDS FOR ORGANIC WINE PROCESSING: OVERVIEW OF DIFFERENT ORGANIC WINE-MAKING STANDARDS

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1. Introduction

This presentation is based on work done in the ORWINE project, a European Research project focused on organic wine processing. One objective of this project is to formulate proposals for future common regulation on organic wine at European level.

Organic grapes come from vineyards conducted under organic farming methods, as defined also at European level, by the EC Regulation 2092/91.

Because wine is excluded of the scope of this regulation (annex 6, concerning processing organic food), there is till now **no legal statute for organic wines at European level**, but only for **wines coming from organic grapes**.

It results that the sole overall rules to be applied to wines processed from organic grapes are those contained in the EC Regulations 1493/1999 (annexes 4 and 5) and 1622/2000, which define the oenological practises and treatments allowed for wines in Europe. Due to the current CMO wine reform and the influence of third countries at international level (OIV and WTO), the European legal framework for wine production is moving towards in a sense of opening to more flexibility in oenological practises.

Nevertheless, organic vine-growers have developed specific approaches for processing their wines in a way they consider in compliance with organic farming principles. These **private initiatives in the producing countries** have taken the format of standards or charters and appear more restrictive than the legal requirements for wine, with limitations concerning the use of additives and technical processes at all steps of wine processing, from grapes picking to wine bottling and storage. They belong to producers groups (Germany, France, Austria), organic farming associations connected with certifiers (Germany, Greece, Italy, Switzerland), certifiers (Spain) or representative national platforms for organic wine sector (Spain). In this last case, the implication of officials (regional authorities and national Ministry of Agriculture) gives quite a public statute to the standards. A particular place in the organic agriculture movement has to be recognized to the bio-dynamic organisations, which have also in some countries wine processing standards.

In the **consuming European countries**, some limitations have also been introduced by organic certification bodies, for example concerning the SO₂ rate in wine at consumption level (UK, ND).

At international level, organic wine processing is defined by the IFOAM Basic Standards (norms for organic production and processing) and by the Codex Alimentarius, which are standards for standards.

As in Europe, there are private standards in most producing countries (USA, Canada, Argentina, Australia). Moreover, the new American federal regulation for organic farming (NOP) includes wine, as do the Japanese Agricultural Standards (JAS).

Methodology and sources of information

The analysis of the legislative and regulatory framework for wine processing included:

General regulation for wine

- The European Wine regulation, concerning the Common Wine Market organization, defines oenological practices to be applied at European level. It collects the following pieces: EC 1493/1999 Council, EC 1622/2000 COM (application, for oenological practices), EC 753/2002

COM (application), EC 1037/2001 and following texts concerning market exchanges between Europe and third countries, EC 2165/2005 Council (new practices);

- OIV prescriptions, which have an indicative influence, and concern all countries. They include the *Codex Oenologique* and the *OIV Index*, which were given an international recognized base for the normalisation and comparison of the other regulatory and standards documents.

International regulation on organic farming, concerning also grapes and wine:

- European regulation EC 2092/91 (excluding grape wines)
- IFOAM Basic Standards 2005 (overall umbrella standard relevant for private standards)
- Codex Alimentarius Guidelines for organically produced food 2004 (Guidance for governments to set their own regulations for organic food and farming)
- National Organic Program USDA (NOP)

Tab.1 : Private standards on organic wine making

Country	Standards in wine producing countries in Europe
France	FNIVAB (Fédération Nationale des Vins de l'Agriculture Biologique) Nature & Progrès BIODYVIN – <i>Biodynamy</i> - DEMETER – <i>Biodynamy</i> - "Return to Terroir" Charter of Quality – <i>Biodynamy</i> – (guideline)
Germany	ECOVIN 2005 BIOLAND 2000 NATURLAND 2002
Austria	BIO-AUSTRIA 2005 DEMETER 2006 – <i>Biodynamy</i> -
Greece	DIO 2002
Italy	AIAB 2000 CCPB 2002
Spain	«Propuesta de normas para la elaboracion de vinos procedentes de la agricultura ecologica» version 6 -Feb2006 [NEW]
Switzerland	BIO SUISSE

Country	Standards in wine importing countries and in overseas
UK	Soil Association prescriptions for wines
N	SKAL standards
Japan	JAS Japanese Agricultural Standards, rev 2006
United States of America	OGWA (California, private)
Canada	COABC 2002 (private)
Argentina	<i>Cuaderno de normas de produccion organica</i> (LETIS S.A, certifier, private)
Australia	NASAA (private)

2. Results of the comparison

The practises and substances listed as allowed or forbidden in each standard/regulation have been clustered in the following areas:

• **Physical practices : allowed by all standards**

Processing method (allowed by European wine regulation)	Allowed in organic wine standards; restrictions
Aeration or the addition of oxygen	<ul style="list-style-type: none"> Generally allowed. Not mentioned by Biodyvin, Demeter France and Spanish standards
Heat treatment	<ul style="list-style-type: none"> Heating and cooling allowed. Precise limitation of temperature given by German standards, BIOSUISSE. General prescriptions for musts and wines. Flash-pasteurization not considered clearly by the standards; practically used in order to reduce SO₂ needs.
Centrifugation and filtration, with or without inert agent	<ul style="list-style-type: none"> Filtration methods allowed by all standards. Spanish standards mention only filtration, and Biodyvin recommends avoiding filtration on wines. All inert agents allowed, except perlite for Demeter and cellulose for CCPB (Italy). Sterilizing filtration not clearly considered; practically used in order to reduce SO₂ needs (especially on sweet wines)
Air protection using inert gazes (CO ₂ , N ₂ , Ar)	<ul style="list-style-type: none"> Allowed everywhere,. Argon not mentioned by the German and Demeter Austria standards.

• **Additives allowed by all standards**

Function / additive	Allowed	Restrictions
N nutrition of yeasts	N salts,	Nature of N salts
Sulphitation	SO ₂ gas	Doses differed according to different standards
Enrichment	Sugar, Rectified Concentrated Musts (RCM), Rectified must (RM)	Organic enrichment preferred Sugar not allowed in Italy
Acidification / de-acidification	Tartaric acid	Conditions of use, natural origin
Fermentation	Yeasts and lactic bacteria	Not allowed by Demeter. Non GM origin
Clarification	Isinglass, casein, ovalbumin, bentonite, silicon dioxide, pectinolytic enzymes	
	Citric acid, L-ascorbic acid	Non GM origin
Treatment of white wines	Oenological charcoal	
	Bitartrate de potassium	

• **Additives and practices generally forbidden:**

- Genetically modified micro-organisms (yeasts, bacteria) or inputs derived from or by GMO inputs (like enzymes, citric acid, ascorbic acid, if allowed): totally excluded as in the general organic regulation;
- PVPP (E1202): to reduce tannin content in the wine and correct some colour defaults;
- Lysozyme E1105 (to control lactic bacteria activity and reduce SO₂ needs);
- Dimethyl dicarbonate DMDC (recently allowed by the European wine regulation in order to help microbial stabilization)

- Ionization and use of ion exchange materials, as in the general organic food regulation
- Sorbic acid and potassium sorbate except for few specific Spanish wines
- **Main practices and additives for which there are differences between the standards**
 - Sulphitation: use of K metabisulphite and K bisulphite;
 - Correction of N deficiency in the musts: principle of correction and type of additives, with different positions on N salts use (Diammonium phosphate, Ammonium sulphate, Ammonium sulphite, Ammonium bisulphite) or other agents stimulating the yeasts growth (Thiamin and yeast cell walls);
 - Deacidification: nature of substances to be used for;
 - Clarification: use of gelatin, betaglucanases enzymes, tannins and potassium caseinates;
 - Reduction of taste defaults: use of Copper sulphate
 - Alternative practices to Sulphitation for unstable sweet wines: physical treatments like flash pasteurization and reverse osmosis.
- **Preservation of wines from organic grapes, use of SO₂**

Sulphites are naturally produced by the yeasts during the wine processing. The addition of SO₂ is traditionally considered as an efficient method to protect and preserve the wine at different stages of its elaboration (on the grapes, for the preparation of musts to be fermented and for preservation of wines). However sulphites use in food processing is restricted because of their potential negative effects on health, both of processors and of some categories of consumers.

Sulphitation is allowed by all the standards for organic wine processing, but with restrictions compared to the wine regulation.

The European Wine Regulation on wines fixes total SO₂ maximum doses in the end product; they vary according to wine types, and notably in relation to the presence of residual sugars, going from 160mg/l for red wines to 400mg/l for sweet wines from Botrytised grapes, such as Sauternes. Additional quantities, up to 40 mg/l of SO₂, are allowed "when approved for all wines except those with final rates upper than 300 mg/l of SO₂ end".

The table below shows that the allowed doses of total SO₂ used during the wine processing are, in the case of all private standards for organic wines, lower than their respective European wine regulation. These reductions vary subsequently between 25% (National Spanish standards) to more than 60% (AIAB standards) for red, white and rosé wines. The differences are essentially explained by the 2 parameters of the type of wine and the climatic conditions in its production area. This last aspect concerns both:

- 1) The well-known relationships between SO₂ addition needs and wine parameters as,
 - acidity of the white wines (higher in the North, protects the wine, less need of SO₂);
 - tannins content of the red wines (higher in the South, protects the wine);
 - sugar content (create unstable conditions, wine to be protected by SO₂);
- 2) Climatic constraints which have an influence on the sanitary quality of the grapes

In third countries, the differences between SO₂ levels are also related to the types of wines and climatic conditions, except in the case of the American NOP. An absolute limitation of 100 mg/l of total SO₂ is given for all types of wines.

The most relevant indicator is the total SO₂ level, because of the reversibility of free forms. Nevertheless, some standards give limits in free SO₂.

Tab. 2 Maximum levels of sulphur dioxide for organic wines in comparison with EU regulation 1493/99 (in mg/l of SO₂)

Wine types	CEE viti-vini (total rates)	FRANCE FNIVAB (total rates)	SPAIN National draft (total rates)	GRECE DIO (total rates)	ITALY A.I.A.B. (total rates)	GERMANY ECOVIN (total rates)	SWITZERL AND BIO SUISSE (total and free)
Dry RED WINES < 5g/l sugar	Maximum: 160 mg/l (+40)	Max :100 mg/l	Max: 120 mg/l (+30)	Max : 60 mg/l	Max : 60 mg/l	R: 100 mg/l Max:160 mg/l	Max:120 mg/l Max free:30 ml/l
Dry WHITE / REDDISH WINES < 5g/l sugar	Maximum: 210 mg/l (+40)	Max :120 mg/l	Max: 120 mg/l (+30)	Max : 80 mg/l	Max : 80 mg/l	R. 100 mg/l Max :210 mg/l	Max :120 mg/l Max free:30 ml/l.
DRY sparkling WINES	Maximum: 150 to 235 mg/l (+40)	Max :100 mg/l	Maxi : 120 mg/l	R. <20 mg/l Max: 60 mg/l	R.<20 mg/l Max: 60 mg/l	Max :150 mg/l	
Semi-dry sparkling WINES >15g/l sugar	Maximum: 185 to 235 mg/l (+40)	Max :150 mg/l		R. <20 mg/l Max: 60 mg/l	R.<20 mg/l Max: 60 mg/l		
Sweet RED WINES >5g /l sugar	Maximum: 210 mg/l (+40)	Max :150 mg/l	Max: 160 mg/l		R.<20 mg/l Max: 120 mg/l	R. <200 mg/l Max.210 mg/l	Max :120 mg/l Max free:40 ml/l
Sweet WHITE / REDDISH WINES >5g /l sugar	Maximum: 260 mg/l (+40)	Max :210 mg/l	Max: 160 mg/l		R.<20 mg/l Max: 120 mg/l	R. <200 mg/l Max :260 mg/l	Max:120 mg/l Maximum free: 40 ml/l
SWEET WINES	With Botrytis: 400 mg/l; Without: 300 to 400 mg/l	With Botrytis: 360 mg/l; Without: 250 mg/l		R.<20 mg/l Max: 120 mg/l	R.<20 mg/l Max: 120 mg/l	With Botrytis: 400 mg/l; Without: 300	Max: 120 mg/l Max free: 40 ml/l
VDN / Vins de Liqueur	200 mg/l	100 mg/l	120 mg/l		R. <20 mg/l Max: 120 mg/l		

R. : recommended

4. Conclusions

The main objective of the ORWINE project is to establish a basis for a future European regulation, concerning organic wines, if relevant.

Consequently, issues related to the relevance of current standards with regard to organic processing food principles and evolution of the general framework of the wine production at international level have to be considered, by a review of all steps of the wine production process. The 3 main concerned technical areas are:

- SO₂ limits, both on quantitative and qualitative aspects;
- Regulation of fermentations, with use of N-salts nutrients, in a context of deep climatic

changes which affect the wine producing areas;

- Enrichment: because of a coming change in general regulation concerning the excluding of sugar, what are the possibilities in the future for enrichment of organic wines? Shall concentrated rectified musts be acceptable and to which conditions?

Wider than technical points, it is important to consider the relevant ways of regulation, in a sense of full respect of the wide diversity of organic wines made in Europe and adapted at the market's needs. Particularly, the following points have to be examined:

- should the EU regulation fix SO₂ levels for each type of wine?
- or should the general organic European regulation need only to authorize the use of SO₂ and leave to regional or local regulations the option of fixing SO₂ levels (depending of type of wines and/or climatic conditions) ?
- should not the regulation fix any limitations of SO₂ and leave the consumer the choice of witch wines satisfy his desires by indicating SO₂ level uses, on labeling ?

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Abstract

Because wines (of grapes) are excluded from the scope of EC Regulation 2092/91 (annex 6, concerning processing organic food, does not apply to wine) concerning organic farming, up till now there is no legal definition for organic wines at European level, but only rules for organic grapes production. This project: ORWINE, is aiming to help the UE commission to develop a legislative framework for the transformation of organic grapes into organic wine. This would allow replacing the current definition "wine made from organically grown grapes" by "organic wines". One of the first tasks of this project is a description of the regulatory framework applied to EU organic wine-making. Legal public and private standards for wine processing are taken in consideration and compared, in order to see convergences and divergences between different standards and identify the main important issues that need to be dealt with by a future European regulation for organic wines making.

Le programme de recherche européen ORWINE, mené dans le cadre du 6^{ème} PRCR, a pour objet de faire à l'issue de trois années de travail, des propositions pour une réglementation européenne de la vinification biologique, puisque actuellement le règlement EU 2091/92 ne porte que sur la certification des raisins. En préambule à ces propositions, une analyse, aussi exhaustive que possible, des différentes réglementations concernant la vinification a été réalisées, y compris une comparaison des cahiers des charges (le plus souvent privés) sur la vinification biologique, existants dans les différents pays de l'Union (plus la Suisse). Cette analyse permet de dégager les éléments de convergence et de divergences entre les différents standards et d'identifier les principaux points importants à prendre en compte dans une future réglementation européenne.

Bisher ist die Weinbereitung im ökologischen Anbau in der EU VO 2092/91 nicht geregelt. Eine Kennzeichnung als „Öko-Wein“ ist derzeit nicht möglich, nur eine Deklaration als „Wein hergestellt aus ökologisch erzeugten Trauben.“ Das vorgestellte ORWINE Projekt – basierend auf dem 6. Framework Programm: „Wissenschaftliche Unterstützung der Politik“ SSP4 soll eine wissenschaftliche Grundlage für die Erstellung von Richtlinien erarbeiten. Eine der ersten Untersuchungen im Rahmen des Projektes ist ein Vergleich von gesetzlichen Regelungen zur

Weinbereitung, zum ökologischen Landbau sowie vorhandener internationaler privater Richtlinien zur ökologischen Weinbereitung. Das Ziel ist es Gemeinsamkeiten sowie Unterschiede zwischen den Regelwerken zu analysieren und so genannte "kritische Behandlungsstoffe – Verfahren" für eine EU-Regelung heraus zu kristallisieren.