

© S. Moreau



Workshop of burning oak barrels

© Les Clos de Paulilles, Port-Vendres



Traditional Banyuls: oxidative ageing in glass demijohn

© S. Charbeau



Cognac glass after a soft shaking

# FROM ENOLOGY



© G. Menzl, Fotolia



© F. Gagné, viticulteur

© F. Elie



Today the wine industry is driven first by the demand for wines and then by the choice of practices adapted to the terroir. It has to deal with evolving markets and consumer expectations, and the challenges of the climate change.

This work approaches all the steps going from the environment of the vineyard to the development of the wine, until its tasting and its effects on health: climate, soil, terroirs, vine varieties, health of the vineyard, cultivation

practices, pruning and training systems, sustainable Viticulture, appellations, wine making, wine composition, technical innovations, organoleptic qualities, research on polyphenols and aromas, sensory tasting...

This beautifully illustrated book reconciles scientific explanations of processes and practical expertise thanks to the experience of the authors. It is intended for any reader who is interested by the wine world, whether a vine grower, an enologist, an informed consumer or a student.

Former Director of Research at Inra Bordeaux, specialist of grapevine Ecophysiology and Training, **Alain Carbonneau** is emeritus Professor of Viticulture at Montpellier SupAgro, founder of the Institute of Advanced Vine and Wine Studies (Ihev). He has created courses in Viticulture and Enology and developed integrated research with Inra Pech Rouge. Author of innovations in training techniques such as the Lyre vine, he has been the President since 1980 of GIESCO, a group of more than 300 international experts and Director of its review, PAV.

Engineer of Research at Inra Pech-Rouge, **Jean-Louis Escudier** received the Laurel engineer from INRA in 2007, for his works in enology and in technology in connection to the qualitative improvement of wines. Expert for France at the International Organization of Vine and Wine (OIV), he is a member of various scientific committees, including the National Institute of the Origin and the Quality (INAO).

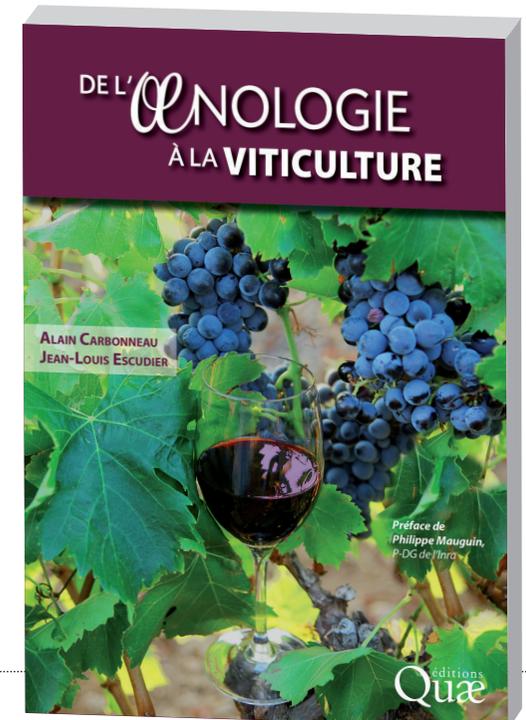
In this **work of reference**, the authors share their passion and experience of the **world of the wine and the vine**. Focused on both science and expertise, this book appeals to a wide range of audiences from **amateurs to insiders and professionals**.

■ A **wide range of topics**: viticulture practices, wine making and composition, tasting and sensory analysis, wine sectors.

■ **Renowned authors recognized** for excellence in their field and their influence on French Viticulture and Enology in the world.

■ An educational book **beautifully illustrated** with maps, illustrations graphics, color photos.

■ Complementary subjects such as: **prestigious products** (Champagne, Cognac), wine and cooking, wine and health etc.



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Éditions  
**Quæ**



At Château Chalons (Jura), the grapevine grows in cool and humid marly soils for producing the famous 'vin jaune' after ageing under 'yeast veil' in barrel.

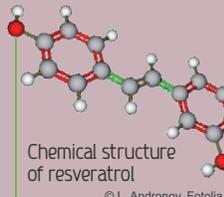


Destemmed and sorted out harvest



Cut Syrah grape berries at three maturation stages

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Price : 39 €  
Text in French



Chemical structure of resveratrol

© L. Andronov, Fotolia

# Summary

## 1. The environment of the grapevine

Where are we growing grapes in the world? • The grapes of the extreme • Where do grapevines come from? • The great historical dates of Viticulture • What are the suitable climates for a quality grape? • How to know the quality of a vintage? • What is a microclimate? • What are the impacts of the climate change on vineyards? • Which are the suitable soils? • To what depth can a grapevine what root? • Terroir or not terroir, that is the question!

## 2. The grapevine in its environment

How to identify a variety at a glance? • What is a 'cépage'? • Are we growing GMO grapes? • Does a dwarf grapevine exist? • The secrets of the seedless grape • Pinot gris : everything is in its skin • About the usefulness of a rootstock • The grapevine sick with its viruses • Can we avoid pesticides? • Sustainable, integrated, organic, biodynamic: endless choices • Fruit-tree or vine? • The functioning of the grapevine: a matter of equilibrium • Should we sacrifice yield to quality? • How can a vineyard yield at maximum? • Is vigor a default? • How long can a vineyard live? • How to tell if a grape is mature? • Do you know how to plant a grapevine? • Is the vine plant as simple as a seed? • Is pruning required? • Pruning the grapevine: artisanal or mechanical • Heating with grapevine shoots? • Training the grapevine: the work of an architect? • Fertilizing and managing the soil of a vineyard • Irrigating a vine: a real problem • The vineyard facing the elements • advanced vineyard mechanization • A 'high-tech' vineyard?

## 3. Wine for everybody

When everything relies on a definition • The wine is conjugated in the plural • The IMAO and the French appellations • The criteria of identification of wines at the world level • Where do all the compounds of the wine come from? • Zoom on some wine compounds about which we speak less • The lighting of the research on the aromas of the wine • Which are the olfactory thresholds of the perception of the aroma compounds of wines? • Polyphenols, much more than a simple matter of color • Unwanted compounds in the wine? • From where comes the astringency? • How much oxygen can the wine consume? • Essential sulfites? • The climate changes, as well as the composition of the wine.

## 4. Wine making

Yeasts and fermentation: what's new since Pasteur? • Yeasts and wine: story of an adaptation • Native yeasts or selected yeasts? • Which yeasts for tomorrow? • From the grape to the wine, microorganisms at work • The wine making or the science of transformations • Wine making using carbonic maceration: the life without oxygen • Why do we practice 'pigeage' of the harvest for red wine making? • Do we extract many polyphenols by converting into wine? • The white wine making, very particular constraints • The life in 'rosé', the secrets of this wine? • How to produce wines with extreme sugar and alcohol content? • Destemming, crushing, sorting out, pressing • From turbid wine to limpid wine • How to manage acidity or alcohol content of a wine? • How to protect wine from oxygen? • Wine and wood, intimate alchemy • How is a barrel made? • How many forest-trees are used for our barrels? • In the secret of the barrel • An international flavoring of the wine by the wood? • Packaging of the wine, from amphora to bag-in-box • The corking also evolves

## 5. The wine sector

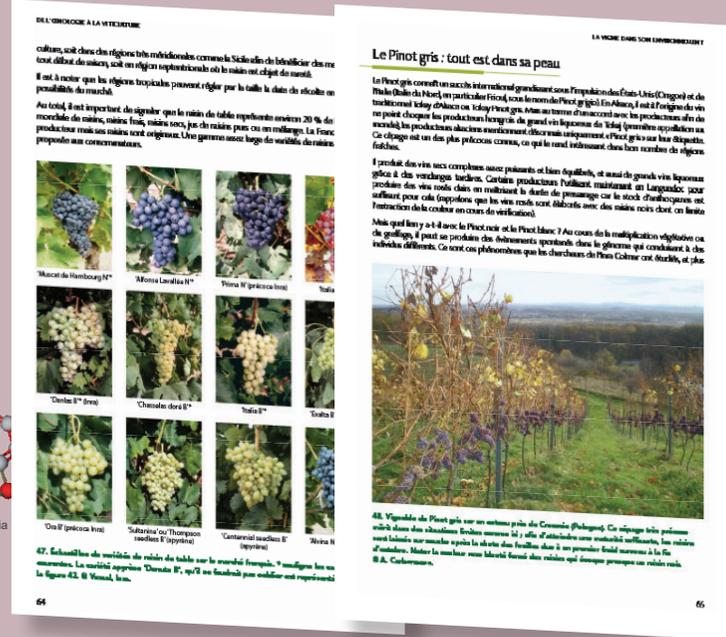
The production of wine • The educations of wine and wine • Authorities and institutions of the wine world • Where is the wine produced? • What are the producing countries in the world? • A multi-faceted wine sector • Can we make wine at home without authorization? • Brief stories of Cooperative cellars • Is there a French model? • Wine, the law and the enological practices along time • Decrypting the label • And tomorrow, where are the next frontiers for wine?

## 6. The consumption of wine products

Even the vine leaves are eaten • A sector which knows how to diversify • Tell me: how do we taste the wine? • What happens in our mouth and our nose? • The taster's sensory act in details • A re-made wine: the Champagne • The Cognac: the most prestigious spirit in the world

## 7 The Wine and the Society

The Oenological innovation between possibilities and ethics • Wine, food and cooking • The evolution of the consumption of wine in France and in the world • Is the wine a food? • Wine and human health



# Awards

- OIV Awards 2017: Special Mention of the Jury of prices
- Gourmand Awards 2018: price winner for France in the category 'Books for Professionals in Viticulture & Enology'

# MOOC Vine&Wine

This book is complementary to the Agreenium's online courses "Vine & Wine" You will have 5 weeks of work to do for a better understanding of wine complexity and wine sector opportunities. From production to tasting, thanks to this online course, you can know it all > Website : <https://www.supagro.fr/web/en/pages/?id=19&all=actualites&id=1411>



## Authors

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