

Cutting through the confusion around Pinot G

Three years in the making, the unique Pinot G Style Spectrum has captured the attention of winemakers and consumers worldwide. The 2011 vintage is its first international release, and further developments are planned but, ultimately, the project aims to confirm styles and help cement its place as a mainstream variety.

Ella Robinson

Leigh Francis

Daniel Cozzolino

Paul Smith

Peter Godden

The Australian Wine Research Institute, PO Box 197, Glen Osmond, Adelaide, SA 5064, Australia

Identifying the style differences between Pinot Grigio and Pinot Gris and communicating them to the consumer has been a confusing and frustrating process for many growers – until now.

It's not an easy style to explain, which stems from Pinot G's origins in Europe and the way it has been adopted across Australia.

Explaining the differing styles and educating consumers as to what to expect from the variety has become increasingly important as Pinot G has moved from alternative variety to mainstream in the Australian wine sector. It is now the sixth largest volume white variety in Australia.

Pinot G is planted across Europe, where it is known by a wide range of synonyms including Auxerrois Gris, Grauburgunder and Ruländer. It is most well-known, however, in the Alsace region of France and in northern Italy, where two very different wine styles have traditionally been produced.

The Italian wines (labelled Pinot Grigio) have tended to be crisp and zesty, while the Alsatian wines (labelled Pinot Gris) have been luscious and rich in texture. In Australia, both of these names are in common use and a wide range of wine styles is produced. Sometimes, however, the name chosen for a wine label has not necessarily represented the style of wine inside.

Industry concern that consumer confusion could affect the future success of the variety formed the catalyst, in late 2007, for the Australian Wine Research Institute's (AWRI) Pinot G project. The AWRI team, in close consultation with industry, began its work to better understand the variety and the styles of wines produced from it, as objectively as possible.

The project questions

The questions to be addressed by the project fell into three parts:

1. Sensory evaluation: Could tasters agree on what constitutes Grigio and Gris styles? And, could they rate Pinot G wine style consistently?
2. Analysis: Could style differences be explained and quantified by laboratory analysis?
3. Communication: Could Pinot G wine style be communicated to the market in a simple manner?

Table 1. List of sensory attributes of traditional Pinot Grigio and Pinot Gris-style wines, as compiled by the Pinot G sensory panel of winemakers and staff from the AWRI.

Characteristics of traditional Pinot Grigio-style wines	Characteristics of traditional Pinot Gris-style wines
Higher acidity	Higher viscosity
Fresh citrus	Hotness
Tropical fruit	Oiliness
Estery	Higher sweetness
Pear	Leesy/solids/yeasty characters
	Spice
	Higher Fruit flavour Intensity
	Deeper colour
	Some bitterness

The first questions were investigated by assembling a sensory panel of winemakers and staff from the AWRI. The panel initially tasted and discussed a wide selection of international and Australian Pinot G wines, and agreed upon a list of sensory attributes describing traditional Italian Pinot Grigio and Alsatian Pinot Gris wine styles, summarised in Table 1. The panel rated a wide range of Pinot G wines for these attributes and sensory profiles were generated.

Having reached good agreement over the characteristics of the traditional styles, panellists were then asked to try to express an overall impression of wine style using a single line scale. Wines perceived as displaying traditional Grigio-like characteristics were rated at the left-hand end of the scale, and wines perceived as displaying traditional Gris-like characteristics were rated at the right hand end of the scale. Wines displaying combinations of both Gris-like and Grigio-like characteristics were rated around the middle. Extensive discussion among panellists ensured that the tasters were considering the same attributes in their ratings on the scale. Results from this initial replicated tasting indicated that Pinot G style could be reliably and reproducibly rated by a sensory panel in this way.

The second question of quantifying style differences was pursued by combining sensory assessment of further sets of Pinot G wines with chemical and spectral analysis and using



Figure 1. Example of a Pinot G Style Spectrum label graphic (for a wine with a rating of 3.0 on the 10-point scale) currently being trialled on commercial wines.

chemometric techniques to analyse the data and produce predictive models.

The third question, of communication, led to the primary outcome of the project – the development of the Pinot G Style Spectrum: a label graphic that communicates to consumers the style of the Pinot G wine in the bottle using a 10-point graduated scale.

A conscious decision was made not to label the Spectrum with the words Gris or Grigio, so as to avoid contributing to the confusion relating to the varietal names. Instead, the descriptors 'crisp' and 'luscious', which refer directly to wine characteristics, were chosen to anchor the two ends of the scale. It should be understood, however, that while these single word anchors were chosen to keep the graphic as simple as possible, a wine's Pinot G Style Spectrum score incorporates the tasting panel's overall perception of the full range of characters listed in Table 1.

During 2010, the Pinot G Style Spectrum label was trialled on a small number of our industry partners' Pinot G products. A website at www.pinetG.com.au was also launched, giving consumers a comprehensive source of information about the variety and the Pinot G Style Spectrum.

For 2011 vintage wines, access to the scale is being opened up to wineries within Australia and internationally. To date, Pinot G Style Spectrum scores have been determined by an AWRI sensory panel, but a rapid spectral prediction method is currently undergoing final validation and will be used in 2011.

Australian Pinot G wines

During the development of the Spectrum we analysed and tasted, under controlled conditions, more than 100 Australian Pinot G

G wines, gaining a unique set of data that is of interest to Pinot G drinkers and producers alike. So, what have we learnt about the Pinot G wines being produced in Australia? And how can winemakers use this knowledge to drive their decision-making?

Let's start with an initial snapshot of the Australian wines that make up this dataset:

- 119 wines, from 2006-2010, with 70% from the 2009 and 2010 vintages
- 74 labelled Pinot Grigio, 45 labelled Pinot Gris
- Wines from regions around Australia including Mornington Peninsula, Adelaide Hills, Tasmania, King Valley, Granite Belt, Clare Valley, plus multi-region blends.

Table 2 summarises the data obtained for this set of wines.

Distribution of styles

We can also look more specifically at the distribution of style spectrum scores, as shown in Figure 2.

It is immediately evident from Figure 2 that the majority of the Australian Pinot G wines tasted exhibit styles around the middle of the style spectrum, with 4.5 the most common score, closely followed by 4.0 and 5.0. No wines were found with rounded scores below 1.5 or above 8.5. This suggests that Australian

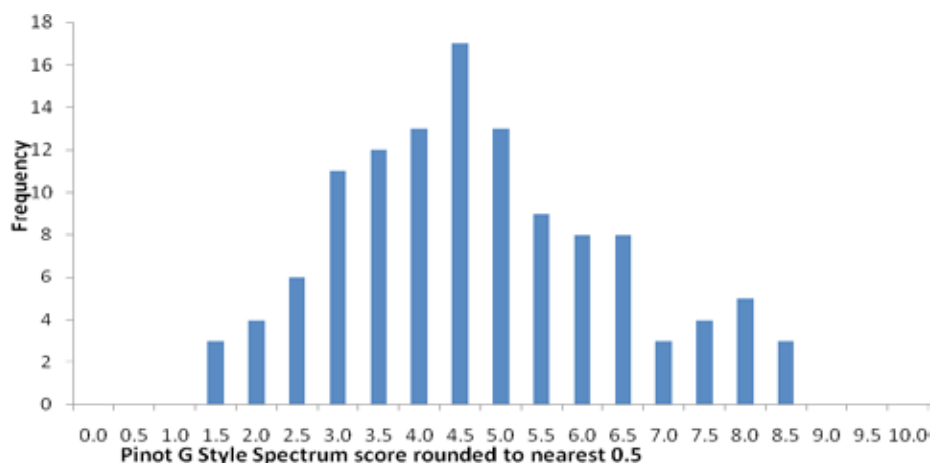


Figure 2. Distribution of Pinot G Style Spectrum scores for 119 Australian Pinot G wines.

Table 2. Summary of chemical, spectral and sensory data for 119 Australian Pinot G wines

	Mean	Sd	Median	Minimum	Maximum
Alcohol (% v/v)	12.8	0.9	12.8	10.7	14.9
Glucose+Fructose (G+F)1 (g/L)	2.9	2.0	2.8	0.2	9.2
pH	3.27	0.14	3.26	2.95	3.69
Volatile Acidity as Acetic acid (VA) (g/L)	0.30	0.07	0.30	0.16	0.50
Titrateable Acidity (TA), pH 8.2 (g/L)	5.97	0.6	6.00	4.10	7.90
A280 (phenolics)	0.1257	0.031	0.1239	0.0769	0.2675
A420 (yellow/brown colour)	0.0095	0.007	0.0085	0.0027	0.0579
Pinot G Style Spectrum score (0 to 10)	4.4	1.5	4.4	1.5	8.7

*Note that only wines with G+F < 10 g/L were included in our dataset

FRENCH & AMERICAN
Oak Barrels

Saury
FRANCE

Saury offers fine grain oak in combination with a slow, deep penetrating toast awarding the winemaker with subtle oak that will lift and support the fruit, while providing texture, length and elegance to the wine.

Saury French • Saury American • Saury European
24 month and 36 month seasoning available

Fire bent and hot water immersion bent available

- Barrique 225L/228L
- Botte 400L
- Hogshead 300L
- Demi Muid 600L
- Puncheon 500L
- Quarter Barrel 50L
- Half Barrel 112L

Saury is supplied in Australia and New Zealand by Kauri NZ Ltd.
For prompt and low cost delivery we stock barrels at the following locations:
Adelaide, Margaret River, Hunter Valley, Melbourne, Hobart, Auckland, Napier,
and Christchurch.

For further information, please contact Kauri NZ Ltd.
NZ Tel: 04 910 7400 • Fax: 04 910 7415
AUS Tel: 1800 127 611 • Fax: 1800 127 609
Email: winery@kauri.co.nz • Web: www.kauriwine.com

Kauri

FERMENTING TROUBLE?
SEND IN A SPECIAL AGENT

The
ORIGINAL
Prise de
Mousse...

IOE 18 2007

The yeast
that never
dies...

IOE

Pipwin - Exclusive distributors in Australia and New Zealand

Tel: 0419 498 333
Fax: 0887 373 085

www.pipwin.com
keith@pipwin.com

Available for Sale or Hire



VELO
GROUP

Velo Modular Crossflow

Jury Road, Berri SA.
PO Box 452, Berri, SA 5343

P 08 8582 9500
Ivan 0429 697 219
David 0408 001 020
Mark 0408 822 434
E jma@jmaeng.com.au
www.jmaeng.com.au

JMA ENGINEERING

winemaking

Table 3. Five examples of Australian Pinot G wines from different parts of the Pinot G Style Spectrum.

	Pinot G Style Spectrum score	Alcohol (%)	Glucose + Fructose (g/L)
'Crisp' example - 2010 Mornington Peninsula	2.0	12.3	0.5
'Crisp' example -2009 Adelaide Hills	2.0	12.0	0.4
'Intermediate' example - 2010 King Valley	5.0	12.9	2.8
'Luscious' example - 2010 Mornington Peninsula	7.5	14.5	6.0
'Luscious' example - 2009 Adelaide Hills	7.5	12.9	3.0

styles of Pinot G tend less to be made at the stylistic extremes, and instead have some degree of both crisp and luscious attributes.

What determines style?

An important part of the project has been to try to understand which wine characteristics have the greatest influence on perceptions of Pinot G style. Such understanding could then assist winemakers to tailor their decision-making if they wished to send their wines in a particular stylistic direction.

In the early stages of the project, we performed extensive chemical analyses on a set of wines that had undergone formal sensory assessment also and then carefully examined the data to look for correlations with the Pinot G Style Spectrum score. In addition to the standard wine compositional analytes (pH, TA, VA, residual sugar, alcohol), we also scanned the wines to obtain their mid infrared spectra and measured the concentrations of organic acids and glycerol. For predicting the Pinot G Style Spectrum score, data analysis revealed that five simple measures, in combination, could account for most of the variation. These five measures were:

- alcohol
- glucose + fructose
- volatile acidity (VA)
- absorbance at 280nm (A280 - a measure of phenolics)
- titratable acidity (TA).

For the first four attributes listed (alcohol, sugar, VA and phenolics), higher values tended to be associated with higher Pinot G Style Spectrum scores (i.e. more luscious wines) and lower values with crisper wines. Not surprisingly, for TA, the association was reversed; that is higher TA wines tended to be crisper/less luscious than lower TA wines, and also received lower style spectrum scores.

Another way to think about this is to look at some specific examples of actual Australian wines from different parts of the spectrum (Table 3).

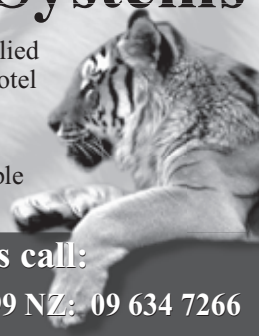
Propylene Glycol for Cooling Systems

Tiger Chemical Company has supplied Propylene Glycol to the wine and hotel industries for many years.

Our product is USP (food/ pharmaceutical) Grade and available for prompt despatch.

To place orders call:

Aus: 1800 35 3099/03 9328 3099 NZ: 09 634 7266
email: sales@tigerchem.com



pH	Titrateable Acidity, pH 8.2 (TA) (g/L)	Volatile Acidity as acetic acid (VA) (g/L)	A280 (phenolics)
3.24	7.1	0.30	0.119
2.98	7.7	0.19	0.091
3.28	6.0	0.33	0.148
3.51	5.6	0.44	0.130
3.43	5.7	0.38	0.160

These examples demonstrate the way these five attributes can combine to influence the overall perceived style and also give some interesting examples of the different approaches being taken to working with this one variety. Of course, these numbers are by no means meant as a recipe for one style or the other, and they don't even scratch the surface of the viticultural and winemaking inputs that contribute to a wine's final style.

What if I want to change the style of my wine?

Having identified the five attributes that influence Pinot G wine style most strongly, it makes sense that any winemaking decisions that affect those attributes are likely to also affect the final wine style.

The most obvious first decision is picking date. Earlier picked grapes are more likely to result in wines with lower alcohol and sugar, and higher TA; that is wines more on the crisp end of the spectrum. Conversely, later picked grapes are likely to result in more luscious wines.

This meshes with what is known about traditional European Gris/Grigio styles, where the lighter northern Italian wines are generally made from early picked grapes and the richer Alsatian wines are made from later picked grapes. Decisions on acid additions, skin contact, fining options and residual sugar levels are all areas where winemakers have the ability to influence the final Pinot G style.

Is there a labelling problem?

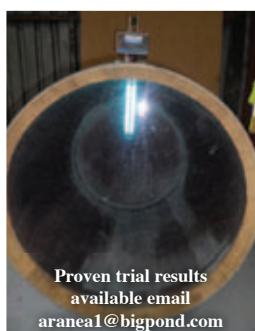
One of the most common questions we are asked about our Pinot G project is "How many Australian wines are 'wrongly' labelled?" While we don't feel it is a question of being correctly or incorrectly labelled, it is interesting to consider the related question: "Are Australian wines labelled Gris generally at the 'luscious' end of the spectrum, and wines labelled Grigio at the 'crisp' end?"

We can look at this by splitting the data into two groups based ▶

Photon Sanitizing Systems Barrel Light

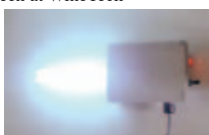
Kills Brettanomyces in Barrel

EXTENDS USEFUL BARREL LIFE BY UP TO 2 YEARS



Aranea Barrel light as seen at WineTech

- No more Sulphur
- No Chemicals
- No more Brett
- MORE OAK
- Improved Malo-lactic fermentation



ARANEA Pty Ltd

PHOTON SANITIZING SYSTEMS

P O Box 36, Stepney, S.A. 5069

P: +61 (0)409 705973 F: +61 (0)8 83626118

email: mvillis@bigpond.com

www.aranea.com.au

Proven trial results
available email
aranea1@bigpond.com

THIS YEAR I WILL USE ONLY THE BEST



ENARTIS PACIFIC RANGE OF FERMENTATION PRODUCTS

ENZYMES

Enzymes for traditional and innovative applications.

ENARTIS ZYM RS

Pectolytic enzyme for rapid settling in difficult conditions.



NUTRIENTS

Nutrients that meet the needs of all varieties and winemaking techniques.

NUTRIFERM AROM

Obtained exclusively from yeast derivatives, it increases the aromatic intensity and complexity of the wine.



YEAST

A full range of yeast strains selected for their desirable enological contributions.

ENARTIS FERM ES 181

It ferments well at low temperatures and produces fermentation aromas which integrate without overshadowing varietal character.



ENARTIS FERM ES 454

It is recommended for the production of wines from very ripe grapes destined for medium-long term aging.



ENARTIS FERM VINTAGE RED

It allows the production of premium red wines even under difficult fermentation conditions.



MALOLACTIC FERMENTATION

Selected and guaranteed bacteria strains that will control the fermentation.

ENARTIS ML SILVER

ML bacteria that provides a fast malolactic fermentation even in wines with high alcohol or low pH.



ENARTIS PACIFIC Australian Branch

PO Box 886
30-38 Tanunda rd.
Nuriootpa
5355 South Australia
Ph. +61 (0)8 85 65 72 44
Fax +61 (0)8 85 62 41 70
darkoo@enartis.com
www.enartis.com

ENARTIS PACIFIC New Zealand Branch

PO Box 4304
39 Edmundson st.
Napier
New Zealand
Ph. +61 (6)8 43 44 13
Fax +61 (6)8 43 44 39
shirley.joseph@enartis.com
www.enartis.com

winemaking

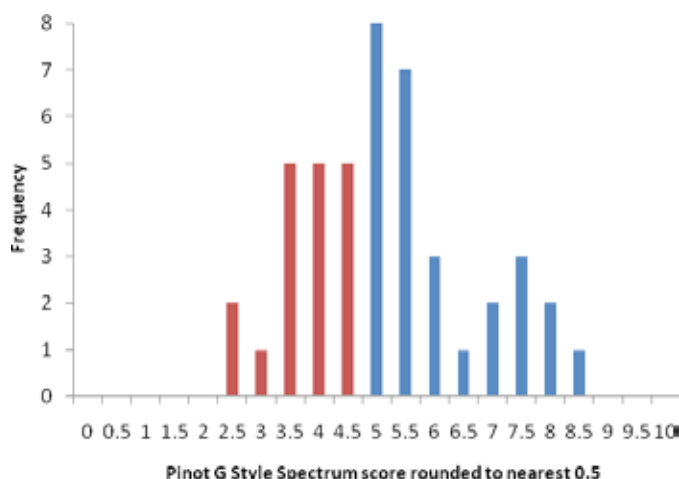
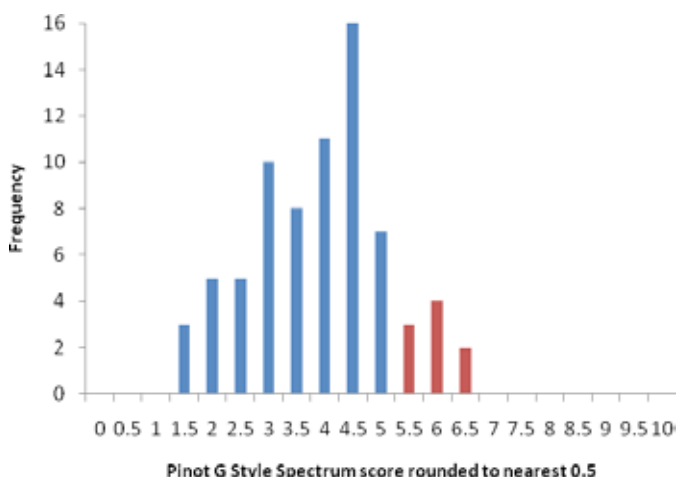


Figure 3. Distribution of Pinot G Style Spectrum scores for Australian wines labelled a) Pinot Grigio (scores > 5.0 shown in red) and b) Pinot Gris (scores < 5.0 shown in blue)

on labelled variety, and then examining the distribution of their style spectrum scores (Table 4).

The differences in the two mean values do suggest that overall wines labelled as Gris are rated more towards the luscious end of

Table 4. Pinot G Style Spectrum scores, broken down by varietal label description

	Mean	Median	Minimum	Maximum	n
Australian wines - labelled Gris	5.2	4.9	2.3	8.7	45
Australian wines - labelled Grigio	3.9	4.1	1.5	6.7	74

the spectrum than those labelled Grigio. However, the minimum/maximum ranges of scores show that wine styles covering the majority of the spectrum (from 2.3 to 6.7) are found labelled with both names. Only at the two extremes (1.5 to 2.3) and (6.7 to 8.7) is one name or the other exclusively used. This can be seen graphically in Figures 3a and 3b.

Digging a little deeper into this labelling question, we find that 12% of the wines labelled Grigio have style spectrum scores on the luscious side of the scale (> 5.0), and 40% of the wines labelled Gris have style spectrum scores on the crisp side of the scale (< 5.0).

So, if consumers are aware of the two traditional European styles and their associated names, you could argue that in at least 12% of

MaloBacti™ HF2

This Highly Functional freeze-dried bacteria strain for use in both red and white wine has an exceptional sensory flavour profile and conducts malolactic fermentation under extreme conditions. MaloBacti™ HF2 has tolerance towards:

- Very low temperature
- High alcohol
- High TSO2 conditions
- Low pH

Additional features

- Low colour degradation
- Complex flavour profile
- Suitable for co-inoculation

For further information, please contact Kauri NZ Ltd.
NZ Tel: 04 910 7400 • Fax: 04 910 7415
AUS Tel: 1800 127 611 • Fax: 1800 127 609
Email: winery@kauri.co.nz • **Web:** www.kauriwine.com

Wild fermentation? TAMED!

Ph: 1300 360 353 Fax: 1300 360 356 www.vinvicta.com



N E W A N D I M P R O V E D

GrapEX has been re-formulated making it the new premium choice for winemakers looking to improve margins and achieve award winning results.

WHAT IS NEW AND IMPROVED?

- lower residual sugar
- reduced titratable acidity
- higher levels of red and purple pigment with lower hue
- improved aromatics allowing varietal character to shine through
- increased stability

GrapEX ... now adding even more value to your wine.

 **tarac**technologies

www.tarac.com.au info@tarac.com.au freecall 1800 827 228

winemaking

cases, Grigio buyers might be surprised by the lusciousness of the wine they buy, and up to 40% of Gris buyers could find the wine they buy is crisper than they might have expected.

It is perhaps more likely, however, that consumers are unsure about the links between Pinot Gris and Pinot Grigio, and are somewhat confused that these wines are sometimes quite crisp and lean, and other times are much more luscious and generous. Compared with purchasing a Sauvignon Blanc, a Pinot Gris or Grigio could, therefore, be considered a more risky purchase.

Not the Pinot G police

The aim of this project has never been for the AWRI to become the Pinot G police. We have no interest in directing wineries how to label their wines. In fact, by the inclusion of

the Pinot G Style Spectrum on wine labels, we hope that the choice of name (Gris or Grigio) will become much less relevant. Consumers will be able to use the spectrum to discover the style of the wine in the bottle, rather than trying to draw a conclusion from the name chosen.

Overall, both consumers and winemakers will find benefits from the greater understanding we've gained of Pinot G styles and what drives them.

As more bottles are labelled with the Pinot G Style Spectrum, consumers can feel more confident about buying the styles of wine they want. At the same time, winemakers will more easily be able to target their winemaking towards the styles they wish to produce.

For more information, or if you are interested in having your Pinot G wine rated on the Pinot

G Style Spectrum, please contact the AWRI on PinotGstylespectrum@awri.com.au or 08 8313 6600.

Acknowledgements

The Australian Wine Research Institute, a member of the Wine Innovation Cluster in Adelaide, is supported by Australian grapegrowers and winemakers through their investment body, the Grape and Wine Research and Development Corporation, with matching funds from the Australian Government.

The authors thank Treasury Wine Estates and Cellarmaster Wines for their support. We also thank Brooke Travis, Emma Kennedy, Belinda Bramley and Nevil Shah for their valuable contributions to this project.

Finally, we would like to thank all panellists who have served on Pinot G sensory panels.

Adelaide researcher wins science award

Research scientist Dr Matteo Marangon has taken out a \$22,000 cash-prize for a viticulture and oenology science award aimed at young people.

Dr Marangon, from Australian Wine Research Institute, won the Viticulture and Oenology 2011 Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry last month.

The award, which was sponsored by the Grape and Wine Research and Development Corporation, will provide Dr Marangon with an opportunity to pursue a 12-month project, exploring an emerging

scientific issue or innovative activity.

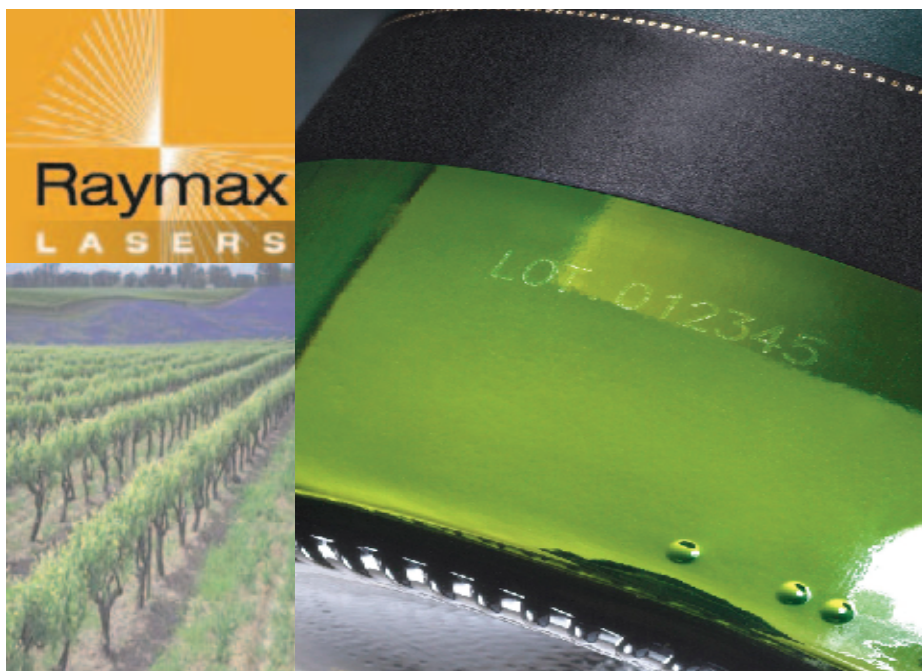
Dr Marangon says he will spend the money to better understand how haze forms in white wine, in the hope it will lead to new and improved methods of haze prevention and new stabilisation processes.

"The award will allow me to undertake research that otherwise I could not have done," he said.

"Moreover I will be able to travel to Montpellier in France to work in Aude Vernhet's lab. I have been there in the past and the collaboration has been very successful.



Dr Matteo Marangon, from AWRI, won the viticulture and oenology 2011 science and innovation award in March.



Coding Applications

Whether on glass,
carton, label, plastic, metal.
All mark with **Raymax Lasers®**

Trusted Service & Supply

Lasers solutions can save time
& money
To find out how.

Contact:

sales@raymax.com.au
Ph 612 99797646

www.raymax.com.au