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World's First Winegrape Census Provides Insights for Australia

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Globalization of the world's wine markets has generated many new wine consumers, and has encouraged those already consuming wine to explore more exotic types. Attracting and retaining consumer (and supermarket) attention requires producers to look for new ways to differentiate their product. At the same time, producers have to cope with ever-increasing competition from other exporting countries, and to respond to global warming. Climate adaptation strategies include switching to more-resilient southern Mediterranean grape varieties, and/or sourcing grapes from higher latitude or altitude regions in wineries' attempts to retain their current mix of grape varieties.

These marketing and climate adaptation needs are generating a demand for information on what winegrape varieties are grown where in the world. Certainly there are great books available on both the varieties and wine regions of major supplying countries, including the latest seminal ones by Robinson, Harding and Vouillamoz (2012) and Johnson and Robinson (2013). Yet none of those resources provides enough information to get a view of the relative importance of the various regions and their winegrape varieties in the global vineyard. To respond to the need for such information, GWRDC has supported a research project at the University of Adelaide to compile, for the first time, such a global database for 2000 and 2010 (Anderson and Aryal 2013a). The 2010 database includes 521 regions in 44 countries, thereby covering 99 percent of global wine production; and it includes just over 2,000 varieties, of which 1,271 are 'primes' and the rest are their synonyms (according to the painstaking DNA-based scientific work reflected in the 2012 book by Robinson, Harding and Vouillamoz). To make the data more accessible, various indicators have been generated and summary charts and tables have been published in a 700-page book that is immediately accessible as a free e-book (Anderson 2013).

What insights does this new resource offer the grapegrower and winemaker in Australia? Four are mentioned here by way of illustration. They relate to Australia's global dominance in Shiraz, to the varietal distinctiveness of Australia's vineyard plantings vis-à-vis the rest of the world's, to the varietal differences between regions within the country, and to emerging varieties that are diversifying Australia's vineyards.

The rise of Shiraz

The popularity which Australia brought to Shiraz/Syrah in the 1990s has led to many other countries expanding their plantings of this variety. In 1990 there were barely 35,000 bearing hectares, making it 35th in the area ranking of all winegrape varieties globally. But by 2000 there were 102,000 hectares, and by 2010 that had risen to 186,000, bringing Shiraz to the 6th position on that global ladder and less than one-third below the areas of the two now-most-widespread varieties, namely Cabernet Sauvignon and Merlot (Figure 1). Over the decade to 2010, the Shiraz area grew more than either Cabernet or Merlot – in fact only Tempranillo expanded faster globally.

Certainly Australia contributed to that expanding area of Shiraz, but expansion was even greater in France and Spain. There were also large plantings in other key New World wine countries, and in Italy and Portugal (Figure 2). As a result, Australia is no longer as globally dominant in this variety: its share of the global Shiraz area has dropped from 29% in 2000 to 23% in 2010 – even though Shiraz has increased its share of Australia's own vineyards over that decade, from 22% to 28% (the next-nearest countries being South Africa and France, with 10% and 8% of their vineyards under Shiraz, respectively).

An index of varietal similarity between regions

Partly because of these changes for Shiraz, the mix of varieties in Australian vineyards is becoming more like the global average. The indicator we use to capture this phenomenon is called the Varietal Similarity Index, or VSI. This indicator – which has a complex formula defined in Anderson and Aryal (2013b) – ranges between zero and one: a VSI value of zero means a region's varietal mix has no overlap at all with that of another region (or its own region

in a different year), and a VSI value of one applies if the two regions have exactly the same shares of bearing area under particular grape varieties. The VSI is useful for indicating the varietal distinctiveness of Australia's vineyard plantings vis-à-vis the rest of the world's, the varietal differences between regions within Australia, and the varietal mix of each region in 2010 vis-à-vis the mix in 2000.

Australia's varietal distinctiveness

The VSI between Australia and the world was 0.45 in 2000, but it rose to 0.62 by 2010, indicating a substantial drift in Australia's varietal mix toward the world aggregate mix. Meanwhile, the average of the VSIs for all other countries in the sample hardly changed, at 0.35. In other words, Australia was less distinct than the average country in its varietal mix in 2000, and its distinctiveness became even less so by 2010. Since France is the country whose varietal mix is most similar to the world mix, this means in effect that Australia has become more like France: the two countries had a VSI of 0.47 in 2000 and 0.58 in 2010.

Regional differences within Australia

Varietal differences between regions within Australia also are more muted than is the case within other countries – notwithstanding the very large differences in growing conditions across Australia. Bear in mind that it is possible for the VSI for a country vis-à-vis the world to be high but the VSI of each region in that country vis-à-vis the world to be low. In France for example, where each region is required by law to grow only a small number of varieties that have been designated as most suitable for that region, the average of its regional VSIs of 0.29 is well below France's national VSI in 2010 of 0.72 vis-a-vis the world's varietal mix (which is the highest in the world, because so many other countries have adopted varieties from France's various diverse regions). In Australia, however, the average of its regional VSIs of 0.53 is not much below Australia's national VSI of 0.62 in 2010, and is almost double the average regional VSI of other countries in the sample.

It is true that some regions in Australia have managed to pull away from the pack and so are more differentiated from the national mix now than in 2000. However, a little over one-fifth

of Australia's 74 regions in the database, comprising 40% of the national winegrape area in 2010, changed their varietal mix hardly at all (the VSI of their mix in 2010 vis-à-vis 2000 was 0.97 or higher). For another one-fifth of Australia's regions, accounting for 22% of the national area, their VSI was 0.95 or 0.96; and for yet another one-fifth (18% of the area) their VSI was between 0.91 and 0.94. Thus it was for just Australia's remaining regions (slightly less than one-fifth of the total number and the national area) that the VSI between their varietal mix in 2000 and 2010 was less than 0.91.

Emerging varieties in Australia

What about the increased plantings of so-called emerging or alternative varieties that are diversifying Australia's vineyards? If we focus on those varieties not in the world's top 20 list, and which have expanded from less than 200 bearing hectares in Australia in 2000, there are ten in the database whose areas have grown significantly since then. But in aggregate those ten raised their share of Australia's total area by only 1.7%. The eight varieties whose area in Australia expanded most over the first decade of this century (see Figure 3) are, apart from Viognier, all in the top 20 globally. And two-thirds of what has been removed in Australia since 2000 is Sultaniye, whose area globally fell by three-quarters over the 2000-10 period – adding to the country's drift towards the global norm.

Since there is a total of less than 50 varieties separately identified in the Australian official data though, that list excludes many of the small emerging varieties that are collected in a residual 'Others' category. Even so, that 'Others' category accounted for just 5% of Australia's total area in 2000 and for only 1.6% by 2010, which means the main varieties have expanded much more than lesser alternative ones. As noted above, the share for Shiraz alone rose 6 percentage points over that decade, while Chardonnay's rose 5 points and the shares of Sauvignon Blanc and Pinot Gris each rose 2 points.

Fortunately the Phylloxera Board of South Australia has a much more-detailed dataset for that state, and it reveals another dozen varieties that have shown some growth between 2006 and 2012. The ABS (2012) also has provided some more varieties in its latest release, also for 2012. These data, shown on the right-hand side of Table 1, refer to planted area rather than bearing area, and so provide a better indicator of recent changes since newly planted vines take three

years to bear. But even these data reveal that emerging varieties make up only a small fraction of 1% of the national area.

Implications

In short, the above data reveal three things about Australia's vineyard. First, Australia's mix of winegrape varieties is not very different from the rest of the world's and, since 2000, it has become even less differentiated. One reason is that even though its signature variety, Shiraz, has expanded its share of Australia's vineyard, that variety has expanded more in numerous other countries. So Australia's mix is now closer to that of France, since France is the closest to the global mix. Whether that is a good thing commercially is unclear. Perhaps Australian producers benefit enough by emulating France's varietal mix to offset any economic downsides, for example from being less differentiated from the world mix, or from growing varieties that may be less than ideal for Australia's terroirs.

Second, even though there are very large differences in growing conditions across Australia, cross-regional varietal differences within Australia are much less than is the case within other countries. Perhaps this is a consequence of producers finding it easier to market well known 'international' (mostly French) varieties than trying to differentiate with less-familiar varieties. But it does suggest there is plenty of scope to explore alternative varieties in the various regions of Australia – which is something grapegrowers are doing in any case as they consider way to adapt to climate changes.

And third, the global database, together with more-recent and more-detailed data, reveal that Australia to date has made little headway in diversifying its vineyards – despite much discussion of alternative or emerging varieties in the media and at conferences. Hopefully this new resource on global varieties will be of some assistance to producers as they contemplate the next stages of development of their vineyards.

Acknowledgements

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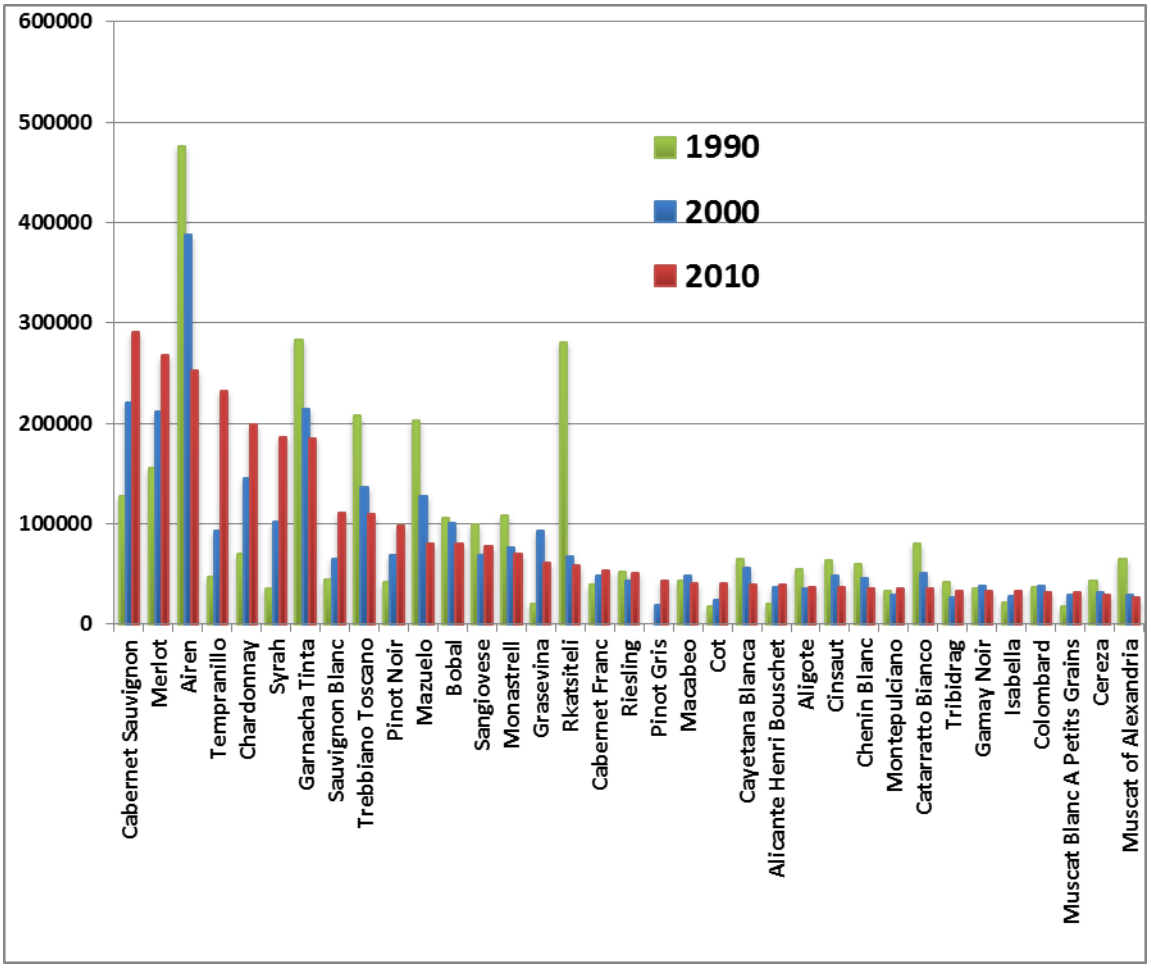
Figure 1: World's top 35 varieties in 2010, compared with 1990 and 2000

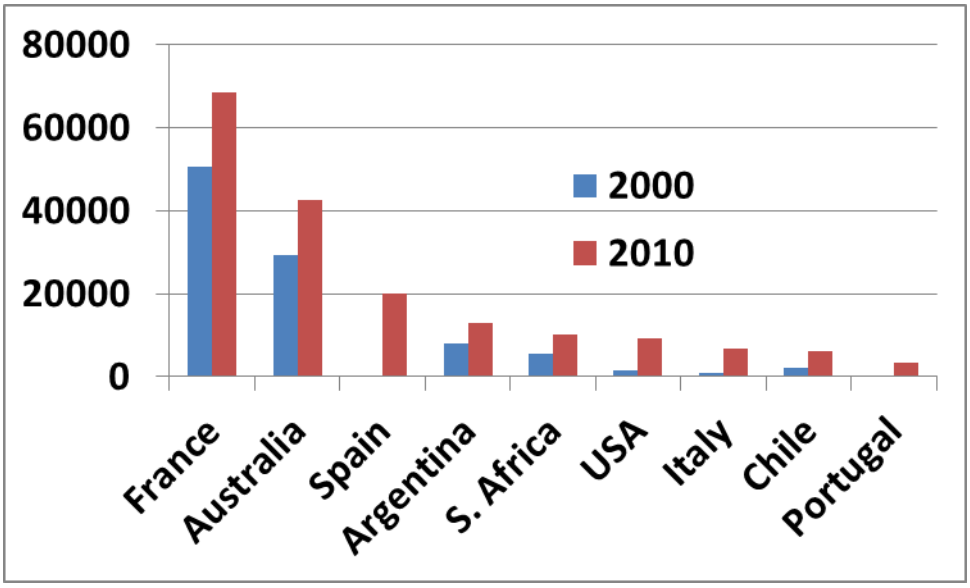
(hectares)



Source: Anderson (2013, Chart 12).

Figure 2: Bearing area of Shiraz, key producing countries, 2000 and 2010

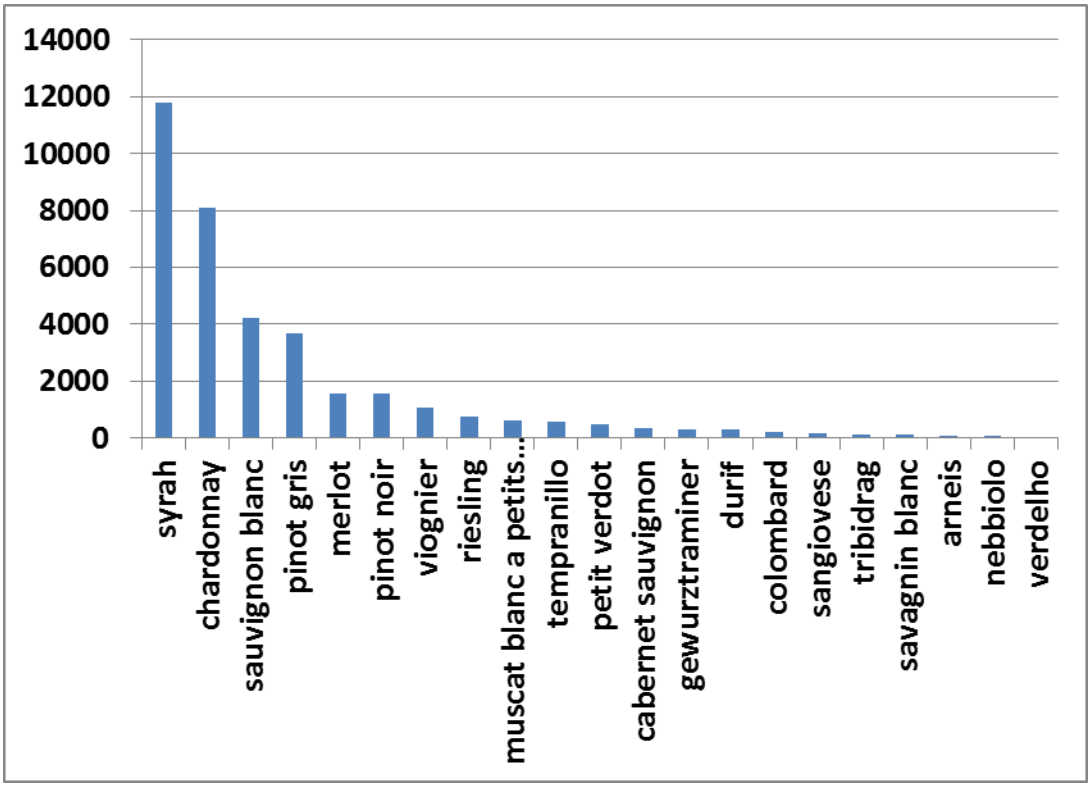
(hectares)



Source: Anderson (2013, Tables 27 and 30).

Figure 3: Increase in bearing area by variety, Australia, 2001 to 2012

(hectares)



Source: Derived from Anderson and Aryal (2013a) and ABS (2012).

Table 1: Emerging winegrape varieties in Australia, 2001 to 2012[a]

	Bearing area (hectares)		**Total area** (including newly planted, hectares)		
	Australia		**Australia**	**South Australia**	
	2001	2010	2012	2006	2012
Arneis		153	81	12	18
Barbera	103	116	104	25	32
Dolcetto		154	124	20	18
Durif	181	417	500	17	37
Nebbiolo	50	98	122	39	47
Roussanne		83		18	27
Savagnin Blanc		94	140	13	56
Tempranillo	41	476	712	169	301
Tribidag (Zinfandel)		149	104	36	33
Viognier	117	1402	1197	506	521
SUB-TOTAL	**492+**	**3142**	**3081+**	**855**	**1090**
% of total	***0.4%***	***2.1%***	***2.1%***	***1.2%***	***1.4%***
Aglianico				1	10
Alicante Henri Bouschet				12	15
Alvarinho				4	15
Fiano			107	10	36
Graciano				7	14
Gruner Veltliner			18	0	16
Lagrain				16	17
Montepulciano			49	3	28
Nero d'Avola			33	1	25
Sagrantino				5	11
Saperavi				6	6
Vermentino			93	5	48
SUB-TOTAL			**300+**	**70**	**241**
% of total			***0.2%***	***0.1%***	***0.3%***
TOTAL	**130,602**	**151,788**	**148,509**	**72,720**	**76,533**

[a] Blank spaces mean data are unavailable, rather than zero.

Source: Anderson and Aryal (2013a), ABS (2012) and Phylloxera Board of SA (2013).