Naked Mountain, Virginia

Demand fuels growth on US east coast

THE WINE INDUSTRY in Virginia dates from the time of the first European settlement at Jamestown in 1607—it can claim to be the site of the first wine production in the New World from indigenous grapes. Native grapes are abundant on the east coast of USA, and Virginia is no exception with eight indigenous species of Vitis.

Thomas Jefferson (the third American president, from 1801 to 1809) is said to have been responsible for importing the first *Vitis vinifera* vines from Europe; he planted these at his Monticello estate in central Virginia. The early experiments with *vinifera* were mostly failures. Growers encountered many previously unknown diseases and pests that thrived on the susceptible vinifera and the industry languished for next 200 years. Hybrids of vinifera and the American species were the saviour of the wine industry on the east coast of the USA from the early 1800s—the most important varieties were Catawba, Delaware and Isabella.

Although hybrid and American varieties are still an important component of the Virginian industry (17% and 6% of total planted area respectively), vinifera varieties dominate today (77% of planted area). This situation has been made possible with better site selection to avoid winter freeze, better disease control and availability of phylloxera-resistant rootstocks (mainly 3309, 5C and 101–14). Most grapes are used for winemaking; less than 4% of the vineyard area is used for tablegrape production, and most of this is Concord.

The most serious site limitation for vinifera is risk of winter injury, but the risk of spring frost damage and bunch rot should also be taken into consideration for some vinifera varieties. Hybrids are more tolerant of winter injury than vinifera and it is recommended that marginal sites should have some proportion planted to hybrids to maximise long-term returns.

In 1980 there were only 100 ha or so in the whole state and just a few wineries. By 1999 there were 785 ha (22% up from the previous year), 180 growers and 55 wineries. The rapid growth in the past decade has been fuelled by a strong economy and increased demand for Virginian wine. Twenty-seven per cent of the area is non-bearing (the same proportion for vinifera as non-vinifera). Virginia ranks seventh in winegrape production in the USA, but it is still dwarfed by the Californian industry[1]. The average yield from the bearing area in 1999 was 7 t/ha (40% higher than 10 year average). In 1988, the average yield of Cabernet Sauvignon and Vidal was 9 and 10 t/ha respectively for the best 50% of growers.

For vinifera varieties, there is a slightly greater area of white than red. In order of importance, for white varieties, Chardonnay has 29% of total vineyard area, followed by

Riesling (6%), Sauvignon Blanc and Traminer (1% each). The area of Riesling is declining, partly due to its susceptibility to berry splitting at 18–19°Brix. For red varieties, there is Cabernet Sauvignon (12% of total vineyard area), Cabernet Franc (8%), Merlot (6%) and Pinot Noir (2%). Cabernet Franc is more cold hardy than Cabernet Sauvignon; the latter can only be grown successfully on the very best sites. Vidal Blanc (8%), Seyval (4%) and Chambourcin (2%) are the main hybrid varieties, and Concord (2%) is the main American variety. There is increasing interest in Viognier, Pinot Gris, Touriga, Sangiovese and Norton. The last is an American variety (*Vitis aestivalis*). It is cold hardy and has good disease tolerance (only 2 to 3 fungicide sprays are required per season instead of the normal 10 to 14 for vinifera varieties). Unfortunately, it has low yield and early budburst. The wine has good red colour without the 'foxy' character common to many American varieties—the aged wine could easily be mistaken for a Cabernet Sauvignon or Shiraz.

Above: The snow-covered Linden Vineyard in North Virginia

Left: Norton, an American variety which is cold hardy and has good disease tolerance

Vineyards are spread over the entire state but 70% of the area is in the Northern and Western Piedmont regions. Counties with the largest areas are (from north to south): Loudon, Fauquier, Madison, Orange and Albermarle[2]. The Tidewater and Eastern Shore regions have a maritime climate due to the proximity to Chesapeake Bay and the Atlantic Ocean. The rest of the state, where most vineyards are located, has a continental climate with hot summers and cold winters. In the latter, winter cold injury is a major threat; winter temperatures in the –18 to –22°C range are not uncommon. Also the risk of spring and autumn frost is high. As a consequence, great attention must be paid to vineyard site selection to minimise these risks. The east has a much reduced risk of winter injury but much higher risk of bunch rot, more disease pressure, and a hot climate not suited to table wine production.

Winchester in the north-west of the state has a climate representative of the northern grapegrowing regions with mean July temperature = 24.0°C, mean January temperature = 0°C, and growing season rainfall (April to September) = 554 mm (approximately 50% of annual precipitation). At Winchester, there are typically 174 days from budburst to harvest for Cabernet Sauvignon.

The vineyard size varies from one to 74 ha; most wineries operate 5 to 40 ha. There is little mechanisation of harvesting or pruning and the industry relies heavily on seasonal agricultural workers. About 20% of producers use some irrigation, mostly drip or 't-tape'. Water deficits can occur in June, July and August and some recent summers have been relatively dry, leading to increased interest in irrigation.

The standard system is row × vine spacing of 3.0 metres × 2.1 metres, cordon training with spur pruning and VSP trellis. The use of divided canopy systems, e.g. GDC, open lyre and Smart Dyson, is increasing. Multiple trunks (see photograph) are commonly used in areas with high risk of winter freeze. Vigour control is difficult due to environmental conditions. Summer pruning (leaf removal, hedging, shoot thinning) and bunch thinning are commonly practised. The warm, humid and wet conditions during the growing season promote fungal disease incidence and rain at or near harvest usually leads to berry splitting and bunch rot. Pierce's disease affects a few vineyards in the east.

Chardonnay ripens in the first week of September in central Virginia, and up to one month later in more elevated locations. In 1999, high quality Vidal and Chambourcin were worth US$672 to $840 per tonne, with good quality vinifera fruit in the range US$1,290 to US$1,570 per tonne.

DR PETER DRY *is a senior lecturer in the Department of Horticulture, Viticulture and Oenology, The University of Adelaide. E-mail: peter.dry@adelaide.edu.au.*

ACKNOWLEDGMENTS

Some of the information used in this article was provided by Dr Tony Wolf (Virginia Tech University). The photograph of Naked Mountain vineyard in the north of the state was provided by Tony Wolf.

1 Virginia produces less than 2% of total Californian winegrape production.
2 All of these counties are north-east of Charlottesville.