

RIVERINA WINE INDUSTRY

Background Information

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INTRODUCTION.....	3
EARLY HISTORY	4
HORTICULTURE	5
WINE & GRAPE HISTORY.....	6
THE WINERIES	7
GRAPEGROWING ATTRIBUTES.....	10
ROLE OF GOVERNMENT.....	15
DEVELOPMENTS IN VINIFICATION IN THE RIVERINA	16
TYPICITY	17
REFERENCES.....	17

INTRODUCTION

The Riverina Wine Region which incorporates the Murrumbidgee Irrigation Area is the second largest wine producing region in Australia and the largest in New South Wales. It is a flat tract of land on the south-west plains of New South Wales and is centred on the City of Griffith which lies at latitude 34°S and longitude 146°W and at an elevation of 136m. Elevation ranges from 221m in the East at Wagga Wagga to 94m at Hay to the west. The region stretches 350k east-west and 270k north-south.

The region was originally explored by John Oxley in 1817 who described it as “a country which for bareness and desolation...has no equal”. In the early years the region developed into a quality wool and grain growing area and much of the region’s wealth is founded on these two agricultural activities.

The term “Riverina” was apparently invented by John Dunmore Lang in the 1850s to describe a type of country (the Riverina Plain) and later a secessionist boundary. The term quickly caught on and began to replace the official district labels of Murrumbidgee and Lachlan. The Riverina became broadly southern New South Wales between the Lachlan and Murray Rivers. Albury and Wagga Wagga approximated its eastern extent. This century the term began to be applied to land to the east of Wagga Wagga and today in many peoples minds extends to the foothills of the Great Dividing Range.

The Wine Industry has used the term Riverina for many years. In the 1980s the local wineries began to promote the Riverina as a general wine production region through the formation of the *Wines of the Riverina Promotion Committee*.

The Riverina Region was formally promulgated by the Australian Wine and Brandy Corporation in 1997.

The following information on the region has been updated from the application submitted to the Australian Wine and Brandy Corporation to register the Riverina and define its boundaries in 1996.

Riverina Winemakers Association Inc

Early History

The name “Riverine”, coined from the province of Entre Rios (between two rivers) in South America, was in use as early as 1857. A long letter under the caption ‘Riverine Colony’ appeared in the Border Post of January 24, 1857.

“...to the west, in the midst of the great rivers of the continent, is the Riverina of New South Wales.
...The Riverina is essentially a pastoral district, in which the squatters are patriarchs owning many flocks. But of all the strictly pastoral districts of the world it is perhaps the best.”

It is impossible to say when the first station in the Riverina was occupied. Country on the upper Lachlan was occupied as early as 1829 when one McHenry took up a place later called Marengo. In the early 1840s there was much activity, and by 1848 practically all the land along the Lachlan, Murrumbidgee and Murray River frontages had been occupied. It was not until this time that the stations in the pastoral districts were clearly described and their boundaries defined.

In the 1860s many Victorians crossed the Murray into New South Wales to become settlers, breeding sheep and cattle. It was said that the herds bred on the stations in their early history were inferior because they had to be produced at the least cost, and they only rose in value when the gold diggers arrived and paid any price for meat. But these herds proved that the interior pastures were good for stock, and convinced people that the land which seemed a desert was actually good fattening country. Graziers discovered the saltbush and realised how valuable it was.

This caused the first of three waves of settlement which swept over the region. The first wave arose from the demand for meat made by the goldfields; the second from the success of the first and from the demand for wool; and the third from the increased value of all squatting property in the 1850s and 60s.

Large numbers of sheep were grazed on the Riverina stations in the 1870s. Before this the overland stock trade to Victoria, which began in the late 1840s, was in part, responsible for the development of the district, and particularly the Riverina towns. Thousands of head of cattle and hundreds of thousands of sheep passed annually over these routes into Victoria for many years.

Today, grazing is an important agricultural activity for the region. Figures collected in 1991-92 by the Riverina Regional Development Board, indicated that agricultural production was \$802 million, or 14% of NSW’s total production for that year, of which sheep and lamb numbers were close to 7 million and meat cattle 500,000.

The advent of irrigation

In 1899 Samuel McCaughey purchased land on the Murrumbidgee River near Yanco and established the grazing property “North Yanco Station”. He had earlier helped develop methods for applying water to suitable land for production of irrigated pastures to “drought proof” family properties.

McCaughey developed an extensive channel system, and later applied his considerable influence to the argument for the establishment of an inland irrigation scheme.

The development of the Murrumbidgee Irrigation Area began in 1908 and was officially opened on 13 July 1912. In 1906, the “Barren Jack and Murrumbidgee Canals Construction Act” led to the damming of the Murrumbidgee River about 60 km south-west of Yass (Burrinjuck Dam) and the development of the vast irrigation area on which much of the current grape growing is based. The Murrumbidgee Irrigation Areas Resumption Act 1910 and the Irrigation Act 1910 authorised the resumption of land which now makes up the Yanco and Mirrool irrigation areas.

However, even before the development of the MIA, potential for growing rice in the Riverina region was being demonstrated near Swan Hill by Japanese ex-parliamentarian, Isaburo Takasuka. In 1914 Takasuka becoming aware of the potential of the MIA, sent his son Sho Noburo to Leeton in the Riverina. Sho Noburo begins working with researchers at the established Yanco Experiment Farm, with Takasuka seed becoming the first to be sown in rice growing trials at Yanco, in 1915. Although this trial results in discouraging yield the Department of Agriculture continued with experimentation and in 1922 demonstrated the viability of rice under field conditions in the region.

Seed harvested in 1923 from a successful 1922 trial of 'Japonica' varieties was offered to settlers. The harvest from this pioneer crop yielded 222 tonnes of paddy.

From these humble beginnings, Riverina rice growers now harvest an annual crop of 1.2 million tonnes of paddy. The Ricegrowers Cooperative formed in 1950 now exports 85% of production, as branded, packaged Australian product to more than 40 countries.

Horticulture

Also seeing the potential of the region land owners begin planting citrus orchards in 1913 with the majority of plantings being Valencia used for processing, which at the time was considered the most financially viable use. Citrus orchards are now planted across the Riverina to as far west as Hillston. Today the Valencia is still predominantly grown with over 2,000,000 trees on 6000 ha, it is two thirds of all orange plantings. 70% of all Valencia's grown in the region are used for processing juice.

Grapevines were also first planted in the District in 1913, with the township of Griffith proclaimed in 1916, which was also the first vintage for the region's viticultural founder, John James McWilliam.

J.J. McWilliam was the owner of the 'Markview' vineyard in Junee, with a wine licence in that town. The same year, his son Jack. J.J. McWilliam, settled in Hanwood beside the then proposed Griffith to Willbriggie rail link. By 1914, some 622 farms covering 9,700 hectares were allotted and in operation. After the Great War, Government sponsored Soldier settlement schemes resulted in rapid expansion of the farm holdings.

Farms were held in perpetual lease and a person could hold only one irrigation farm. Farms were split into two types depending on the type of water right held. Horticulture farms had a higher level of water supply security than the large area farms, and it was forbidden to plant horticulture on land which did not have a high security water allocation.

There was steady development during the war years and in the period immediately after the two World Wars. This includes the beginnings of De Bortoli Wines with Vittorio De Bortoli arriving in Australia in 1924 and purchasing a 55 acre property at Bilbul near Griffith. Subsequent expansion in 1925 saw the Corbie/Merungle Hill areas established. However conditions were difficult, and the early years of soldier settlement saw the toil of enthusiasm fail due to inadequate knowledge and training in irrigation farming, and most soldier settlers were forced to abandon their farms by the end of the 1920s. The depression of the 1930s saw further failures.

The end of the second World War saw a flood of Italian immigrants with the result that today, over 25% of the population is either Italian or of Italian descent. Today the MIA and districts comprise around 2,000 farms, with horticulture and large area enterprises in approximately equal numbers.

A strengthening wine industry encouraged the establishment of ancillary industries.

In 1963 a local company, A&G Engineering was established in Griffith. The company specialises in supplying equipment to the wine industry, both in Australia and overseas. A&G developed the "Potter Fermenter" named after owner Ron Potter, a patented multi-purpose stainless steel tank with a conical base which was said to revolutionise fermentation technique in the early 1970's. The Potter Fermenter was successfully exported and for some time manufactured under licence in the USA. IN the last ten years the company has supplied tanks and equipment to wineries in France, USA, Cyprus, Portugal and Chile, and built wineries in Viet Nam and China.

The company has been responsible for the design, erection and equipping of numerous wineries throughout Australia. Today there would be few wineries in Australia without some piece of equipment supplied and/or built by A&G.

In 1977 a state of the art winery was established at Charles Sturt University in Wagga Wagga. The Charles Sturt Winery supports University research and education programs in viticulture and winemaking for the region. In 1989 the winery was restructured to put the enterprise on a commercial basis.

Over 95% of the region's winegrapes comes from Griffith and Leeton with small quantities grown at Wagga Wagga to the east, Jerilderie and Coleambally to the South and Hay and Hillston to the west. However there are

new viticulture plantings springing up throughout the region with grapes being grown at Deniliquin, Narrandera, along the Murrumbidgee River at Darlington Point, and at Lake Cargelligo. Growers in these areas generally direct their fruit to Griffith/Leeton based wineries.

The City of Griffith (population 25,000) is central to the area under vine which in 2007 totalled an estimated 20,000 hectares, of which approximately 18,000 was bearing. It is bounded by the Cocoparra Ranges to the north east and the Hay plains to the west and is strategically located between the important markets of Sydney (650k north-east), Canberra (300k east) and Melbourne (500k south). The Murrumbidgee river flows east – west through the region passing through both Wagga Wagga and Hay. It flows 40k south of Griffith at its closest point.

The Riverina is one of the most significant agricultural areas in Australia with large tonnages of rice, winegrapes, citrus and vegetables being grown. The area is a large producer of chicken.

Wine & Grape History

In its first and only report, the Irrigation Trust identified viticulture as a potentially productive activity. In June 1912 John James McWilliam arrived in the district with his eldest son Jack from their Markview winery in Junee.

McWilliam planted his first vines in Hanwood (some of these have been retained at Hanwood and still bear fruit!) in the Spring of 1913 and were kept alive by the carting of water until the irrigation channels arrived in October. Doradillo, Shiraz and Malbec were planted from cuttings brought from Junee.

The first grapes (19 tonnes) were picked in 1916 and sent to Junee for processing. The Hanwood winery was commissioned in February 1917 and processed 170 tonnes. By the 1920s the winery averaged 5,000 tonnes.

Penfolds followed McWilliam's in 1919. In 1922 Penfolds offered eight-year grower contracts which were not renewed after their expiry which coincided with the Depression. Penfolds was followed by De Bortoli in 1928, Rossetto in 1930 and Miranda in 1938 and West End in 1945. Winery establishment has tended to occur in the irrigated areas, with only the Charles Sturt winery at Wagga Wagga located outside the MIA. There are 13 major wineries in this area varying in size from 10 tonnes to 160,000 tonne capacity.

Grape production in the region increased slowly at first (11,596 tonnes in 1930 to 21,663 tonnes in 1961), but expanded considerably in the 1960's to reach 92,715 tonnes in 1981. The major varieties then were Pedro, Semillon, Trebbiano, Doradillo, Grenache and Shiraz. These varieties were grown predominantly for the production of fortified wines. Today the Riverina produces in excess of 110,000 tonnes of fruit.

As a result of the Depression and the collapse of prices, growers petitioned the NSW Government for the creation of a marketing board. Following a poll of producers in 1932, the Wine Grapes Marketing Board was established in February 1933 with the role of representing grower interests in their dealings with wineries. The Board continues to play this role today. Most vineyards are still on small family farms of about 20 ha where other horticultural crops are also produced. The majority of grape growers are of Italian descent.

In the 1950's following a succession of wet winters, widespread waterlogging and salinity problems arose which threatened the continued existence of the irrigation industry. The horrendous flood year of 1956 saw thousands of trees, particularly stone fruit trees, perish, and a Board was established to coordinate and oversee the installation of underground tile drainage systems, designed to prevent the water table rising through the sub-soil thus keeping the leached out salts away from the roots of the vines and trees. The first of these drains was placed in 1961.

Rapid expansion of premium varietal grape plantings began in the late 1960's as the market moved away from traditional fortified wine styles, acquiring a taste for red and white table wines. The advent of the Botrytis affected sweet white wine styles for which the region is famous, began in 1958 at McWilliam's Hanwood winery. These particular wine styles have since gained extensive National and International recognition, with the De Bortoli company to the fore.

The growth of the wine industry in the 1990s on the back of the export boom has seen grape production increase from around 100KT to almost 300KT. Much of the newer plantings has taken place on broad acre farms following de-regulation of plantings in the late 1990s. Until 1997 land use and plantings were regulated with

permanent plantings only allowed on land gazetted for that purpose and using high security water. The dropping of that requirement has seen many plantings on rice farms using general security plantings.

THE WINERIES

Australian Old Vine Wine (Beelbangera)

As family, we, Elio and Marie welcome you into our home to enjoy and experience the long held Tradition of growing and making wine.

For over 26 years our family have worked our vineyard, hand picking and pruning our vines, using only organic sprays and fertilizers to ensure a perfect growing environment for our grapes. We both believe and encourage nature in creating the best fruit possible for our special vines.

Every vintage we welcome into our home backpacking youth from around the world to help us pick fruit and celebrate the new vintage. Our low yielding old vines produce wine of great colour and intensity which we then carefully craft into wine. Our red wines spend 12 months maturing in a mix of French and American oak barrels before we are happy to label them Australian Old Vine wine. Even our label celebrates the history and tradition of nature and winemaking in the Australian outback. Local artist Jeff Wright was inspired by our hands on, environmentally friendly winemaking style.

Baratto Wines

It has been a Baratto family tradition, in Italy, for many generations to make wine for themselves and locals in their village. In 1949, Florindo Baratto immigrated to Australia and purchased bare land in Hanwood. He and his wife Amabile planted their first vines in 1960 and these vines are still producing grapes today.

In 1970, it was Florindo's love of wine that encouraged him to carry on this tradition and make a batch of Trebbiano wine in a small cement tank for family and friends. By word of mouth the demand for his wine saw his hobby become his profession and is now carried on by his son Peter.

The 40 acre family vineyard is the sole source of grapes used in all their wines. Peter and Karen's philosophy is simple, produce fine seasonal wines without using pesticides on the vineyard and sterilants or antifungal agents in the wine.

Beelgara Estate

Originally known as Rossetto Wines, Beelgara Estate was founded in 1930 by Angelo Rossetto, this family owned winery still places heavy emphasis on excellence, quality and service. The

Rossetto Wines is credited as one of Australia's first producer of Chardonnay. The earliest records from the company show that in 1969 Rossetto won a Silver medal at the 1969 Adelaide wine show.

Berton Vineyards

Located in Yenda with a cellar door open to the public.

Casella Wines

Established in 1969, Filippo and Maria Casella saw a winery as the way to add value to the grapes they were producing and selling to local wineries. In 1994 their son, John Casella, returned to the family winery and embarked upon an expansion program which continues today. The heritage of Old World individuality and New World technology has created some of Australia's finest wines. Attention to detail with fruit from their own vineyard, 'Carramar Estate', plays a significant part in the success of the wines.

Charles Sturt University Winery (Wagga Wagga)

A modern winery was built in 1977 to support the CSU wine science teaching program with the management of the winery being restructured in 1990 to put the enterprise on a commercial basis. In 2002 a new state of the art winery was completed and was officially opened by the Hon. Brendan Nelson MP, minister for education, science and training in April of that year.

It was seen as important that the winery reflect the same environment as other commercial Australian wineries, being market driven and producing the quality and styles of wine that obtain ready acceptance from discerning wine consumers in the open market place. To this end a professional management team has been running the winery since 1990. The winery supports the University's research and education programs in viticulture and winemaking.

The winery focuses on producing its own range of premium table, sparkling and fortified wines. As well as processing grapes from the Universities own vineyards at Wagga Wagga and Orange on the NSW Central Ranges, the winery also sources grapes from other NSW regions such as the Hilltops area around Young and up to Tumbarumba in the Snowy Mountains of NSW (Australia's premium sparkling wine grape growing area).

The winery enterprise demonstrates an accountable commercial operation and under the guidance of the professional management team provides stimulating training for students' fortunate enough to be employed in the winery.

De Bortoli Wines

Commenced in 1928 by Vittorio De Bortoli, today De Bortoli's Bilbul winery is the headquarters of De Bortoli Wines and where Darren De Bortoli oversees the production of Noble One and Rare Dry Botrytis, the Deen De Bortoli range and Sacred Hill ranges, the Emeri Sparkling Wine and the popular premium fortifieds. One of the largest family wine companies in Australia, De Bortoli Wines exports to over 30 countries around the world. Open seven days.

Lillypilly Estate Wines

Decades ago, Pasquale Fiumara came to Australia from Italy to establish his family in a new country. Lillypilly Estate was born in 1972 with the planting of the first vines at Leeton. Today the Fiumara family continues to create award winning wines, using a blend of tradition and technology. Tramillon®, Red Velvet® and Gypsy Rose® are registered Trade Marks for Lillypilly Estate. The range also includes Chardonnay, Sauvignon Blanc, Cabernet Sauvignon and Shiraz. Lillypilly Estate also specialises in dessert wines and has won many awards for its unrivalled range.

McWilliam's Wines

In 1912, John James McWilliam arrived at Hanwood, near Griffith, with a bullock and cart carrying 40,000 vine cuttings. Today, McWilliam's Wines is one of Australia's largest and most highly respected family-owned wine companies with six generations and 130 years of winemaking experience. In 2006 alone, McWilliam's was awarded a total of 36 trophies and 661 medals and was awarded the Most Successful Exhibitor trophy at the 2007 Sydney Wine Show for an unprecedented 13th consecutive year.

McWilliam's Hanwood winery is distinguished by its unique barrel-shaped cellar door and is one of the largest wineries in the region. Producing many different grape varieties, McWilliam's Hanwood continues to craft wines that have earned a reputation both in Australia and abroad for their exceptional character and premium quality.

McGuigan Wines

Purchased by McGuigan Simeon wines from the Miranda family, the winery became home to Dal Broi Wines in 2005. The original winery was founded by Francesco Miranda in 1939. The winery is not open to the public.

Nugan Estate

Nugan Estate, a third generation premium producer of fine wine and extra virgin olive oil based in Griffith, NSW. Nugan Estate currently owns 590 hectares of vineyards ranging from the home vineyards at Darlington Point near Griffith, through to the McLaren Vale and King Valley. In addition, the family sources premium quality fruit from the Coonawarra. Family operated by Michelle, Matthew and Tiffany Nugan, the Nugan Group is now complemented by the three wine labels, Nugan Estate, Cookoothama and Talinga Park, premium extra virgin olive oil and the award winning Griffith restaurant, Michelin.

Orlando Wickham Hill

Located in Jensen road this winery is not open to the public.

Piromit Wines

Established in 1998 the Piromit winery is located near the village of Hanwood, just a few minutes drive from the thriving city of Griffith. Piromit Wines is a genuine boutique winery crafting a niche in the domestic and overseas market.

At a time when many large producers are flooding the market with multi regional blends, often generic in the characteristics they offer, Piromit Wines prides itself on presenting distinguished varietal wines made from locally grown grapes.

In doing so, Piromit Wines produces truly unique and character driven wines packed full of warm climate fruit ripeness. Deftly handled in the winery, the wines retain the intrinsic varietal and regional nuances for which the Riverina is renowned.

Winery trailblazers who invariably find themselves at Piromit Wines are always pleased to discover the range of value packed and affordable wines that represent excellent value for the discerning wine buyer. Piromit Wines, the right wine every time.

The Wine Group

The US-based Wine Group purchased this winery from Evans and Tate in 2006. This winery was originally built by Cinzano in 1976, and later acquired by a management buyout in 1991. The company went public in 1998 and was acquired by Evans and Tate in 2003. The Wine Group purchased the winery in 2006.

Toorak Wines

Toorak Wines is a family owned and operated winery established in 1964 by Vince and Frank Bruno. The old fortified cellar is still operated as it was when the winery was established, producing fortified wines. The newer part of the winery has slowly grown over the past 20 years and is now run by a second generation of winemakers and the company now produces a wide variety of products.

Warburn Estate

Warburn Estate's outstanding success in the Australian and international wine market has been achieved through its expertise in blending traditional winemaking skills, innovative techniques and sound market knowledge. It is one of Australia's most significant wine producers, with more than 1000 hectares under vine, a crush capacity of 40 000, tank storage for 35 million of wine.

Warburn Estate proudly remains a private company, maintaining its winemaking independence along with the ability to quickly respond to market demands and clients needs. The company is owned by the Sergi family, whose winemaking traditions began in Italy and have continued for several generations at Tharbogang

West End Wines

Westend Estate is a traditional wine business established in 1945. Westend Estate's philosophy is "keeping it personal." Bill Calabria, Managing Director and Chief Winemaker of Westend Estate and his wife Lena, and their four children all play major roles in the winery that was established by Bill's parents, Francesco and Elizabeth Calabria.

Bill adopts a hands - on approach, liaising with growers and working closely with his winemaking team, supervising every aspect of the winemaking process to guarantee that Westend Estate's reputation for exceptional quality is maintained.

Bill has been involved in the wine industry for over 40 years. As the President of the Riverina Winemakers Association for four years, Bill Calabria has helped to transform the image of the Riverina region and he is often described as the Champion of the Riverina.

Westend crushed 7,500 tonnes of grapes in 2006 producing over 5 million litres of wine making it a medium

sized winery and a contender in the Australian and export wine industry. Westend Estate wines are available domestically and are exported to approximately 25 countries including the UK, Europe, USA and North and South America.

Zappacosta Estate

Located on Irrigation Way.

GRAPEGROWING ATTRIBUTES

Geological features

The Riverine plains were deposited by the action of ancient streams upon the remnants of the Great Dividing Range and thus consist of highly variable alluvial soils with sands and gravels embedded in clays.

The main soil type of the Riverina is red-brown earth. It has a loamy surface horizon 10-35 cm deep and passes abruptly to a reddish-brown clay which contains lime at a depth of about 70 cm. Most of these red-brown earths, although deposited by ancient streams, have been elevated above the general plain level and are found around the lower hill slopes and river ridges. Many of these contain limestone rubble. It is on these soils which are generally free-draining around Griffith and Leeton that the majority of the vines are planted. More recent developments on what was rice country is grey river soils.

The City of Griffith is central to the region, lying at the foothills of a low range of hills rising above the Murrumbidgee Valley. Land to the East, South and West of Griffith is generally flat comprising traditional red/brown earths ranging from duplex soils in the horticultural areas to heavy cracking clays of the floodplain soils. To the North West these are patches of Mallee high calcium soils

Many of the soils are prone to water-logging. Salinity problems occur in areas with impeded drainage which causes salts to accumulate in the topsoil. Reclamation is achieved by re-designing farm drainage in conjunction with land-forming and tile drainage. Vines can only be grown with irrigation in this region.

Climate

The region has an average annual rainfall of 406mm which is spread evenly throughout the year. High evaporation and low relative humidity, high solar radiation and ample sunshine are features of the summer season. A characteristic of the climate is the high growing season temperatures with the mean for January being 23.8°C.

Autumn conditions favour the onset and spread of the fungus *Botrytis cinerea*, with April to May temperature of 14.3°C and humidity of 77%. The warm climate decreases gradually with the onset of Autumn but still achieves a reasonably high daytime temperature and with the showers usually accompany this change of season, misty mornings and fogs arise which govern the degree of the *Botrytis cinerea* infection. The higher humidity late in the season, allows the *Botrytis* or “Noble Rot” development to occur after the picking of most of the red and white varieties. With the region having such a low natural rainfall and the vines needing water at very specific times during their growing season, grapes can only be grown here economically with irrigation.

Harvest dates of major varieties compared with neighbouring areas.

	Tumbarumba (a)	Young (a)	Wagga (a)	Griffith /Leeton (c)	Wentworth (b)
Chardonnay	Mid/Late March	March/April	Late-Feb	Late Feb	Mid-Feb
Colombard	n.a.	n.a.	n.a.	Mid-March	Mid-March
Muscat Gordo Blanco	n.a.	n.a.	Late-March	Mid March	Mid-March
Palomino	n.a.	n.a.	Early March	Early Feb	n.a.
Riesling	n.a.	Early April.	Mid-March	Early March	Late Feb
Sauvignon Blanc	Late March	End-March	Late Feb	Mid-Feb	Late Feb
Semillon	n.a.	End March	Early March	Feb/March	Feb/March
Traminer	n.a.	n.a.	Mid-Feb	Mid-Feb	n.a.
Trebbiano	n.a.	n.a.	n.a.	Late-March	n.a.
Cabernet Sauvignon	May.	End April	Early April	Late March	Mid-March
Grenache	n.a.	n.a.	n.a.	Mid-March	n.a.
Mataro	n.a.	n.a.	n.a.	Mid-March	n.a.
Merlot	n.a.	Mid-April	Early April	Mid-March	n.a.
Pinot Noir (spkng)	Mid/Late March	End-March	Mid-Feb	Mid-Feb	n.a.
Ruby Cabernet	n.a.	n.a.	n.a.	Mid-March	Mid-March
Shiraz	n.a.	Mid-April	Late March	March	March

Harvest dates in Wagga are generally 4-7 days later than Griffith for comparable wine styles.

Comparative Climatic Data

The shaded cells are towns within the Riverina Region.

	Altitude	MaxJT	MeanJT	Average Max Temp Sept-Mar	Degree Days (Sept- March)	Annual Rainfall	Raindays	Relative Humidity Sep-Mar 9am	Relative Humidity Sep-Mar 3pm
	metres	°C	°C	°C	°C	(mm)		(%)	(%)
Tumbarumba	645	28.6	20.1	23.6	1220	978	107	61	44.1
Young	440	30.9	22.6	26.1	1753	653	87	60.6	41.6
Cowra PO	382	32.3	23.6	27.8	1962	612	83	56.1	38.7
Forbes	237	32.0	24.4	27.6	2140	523	76	56.7	36.7
Wagga	221	31.2	23.7	26.0	1890	570	103	59.6	37.3
Corowa composite	143	31.6	23.6	26.6	1940	536	88	59.3	38.0
Lake Cargelligo	162	33.4	25.8	29.0	2444	424	59	55.7	35.6
Leeton	140	31.9	24.6	27.2	2162	430	81	54.3	34.6
Griffith CSIRO	136	31.3	23.8	27.1	2071	409	65	55.0	34.1
Hillston	123	32.9	25.6	28.5	2404	361	61	50.7	31.3
Berrigan	119	32.0	24.1	27.0	2030	446	77	n.a.	
Hay	94	33.0	25.1	28.3	2302	365	65	53.0	31.4
Balranald	61	32.6	24.5	28.0	2200	320	60	57.3	33.9
Wentworth	37	33.3	25.4	28.4	2348	288	60	48.0	27.6
Renmark	20	32.5	24.7	28.1	2285	262	63	52.3	30.6

Temperature and rainfall patterns vary as the one moves from East to West and from North to South, with the North West (Lake Cargelligo, Hay and Hillston being generally hotter and drier than the South and East. While there are minor amounts of grapes grown in the North Western section, most grapes are grown in area surrounding Griffith and Leeton. There are no grapes currently grown on elevated land in the region as the preference is to utilise gravity irrigation to avoid pumping costs wherever possible.

Irrigation

Most grapegrowing occurs within the Murrumbidgee Irrigation Area (MIA) which was officially opened in 1912. Irrigation water is drawn from the Murrumbidgee river at Berembed Weir some 40k east of Narrandera and is directed through the main irrigation canal to a system of secondary channels which reticulate low salinity water to approximately 3,000 farms (which represents around 2,000 enterprises). Water flow is entirely by gravity, although there is increasing use of controlled flow applications driven by a combination of environmental concerns and rising water costs.

Some grapes are also grown in the Coleambally Irrigation Area which lies due South of the MIA, as well as at Hillston, Lake Cargelligo and Hay with water pumped directly from the Lachlan and Murrumbidgee Rivers or from bores. There are also grapes grown at Jerilderie, Finley and Deniliquin with water supplied from the irrigation schemes sourced from the Murray River.

The original flood irrigation system has been very much streamlined and modified since the early days and recent innovations such as total farm designs, re-cycling systems, the usage of micro-irrigation systems, siphons and farm laser levelling, has confined water wastage to a minimum. There is currently a program to place all horticulture under piped delivery which will further reduce overall water usage.

Horticultural farms in the MIA consume in total around 120,000 ML per annum. Total area to horticulture is around 30,000 ha. Water entitlements are 217,000 ML and part of the unused surplus is traded each year through a “temporary water pool”. Water quality is generally described as high, with the salt content of irrigation water reaching Barren Box swamp in the MIA in the order of 200 EC units.

Horticulture in general and the wine industry in particular is environmentally and economically superior to other irrigated agricultural enterprises in the Region such as rice growing, pasture and cropping having:

- a low annual water use in the range of 2.5-5.0 ML per ha,
- a high dollar farm gate return of \$15,000-20,000 per ha,
- value adding in a ratio of 7:1 during the wine making process,
- an attraction to tourists
- a minimal drainage percolation to the water table, preventing rising water tables and soil salinisation and nutrient loss,
- a nil or minimal surface drainage component preventing movement of surface nutrients and pesticides downstream,
- IPDM programs employing mostly “soft” pesticides, with no drift problems to neighbouring properties,
- a “low till” soil management regime.

A very large part of the region has access to water from irrigation schemes and there is increasing interest in grapegrowing in a number of parts of the region, particularly from large area irrigators who are coming under increased pressure to improve irrigation efficiency due to restrictions on access to water. Apart from a number of regulatory criteria that must be met in the MIA in terms of water security, drainage and effluent disposal, the only factor limiting viticultural activity is, as is the case with most regions in Australia, access to a reliable water supply.

Viticultural characteristics

Viticultural practices are generally uniform across the Riverina. Vines are trained high (1.5 metres) on a single or double foliage wire. Row width is usually 3.5 metres and the vine spacing 2 to 3 metres with the density at 1200 to 1500 vines/hectare. A third is mechanically pruned with the remainder to two bud spurs. The region is phylloxera free but prone to nematode infection.

Yields have greatly increased over the years as a result of better clones becoming available, selection of virus-free material, the introduction of the Patterson under-vine plough, the use of fertilisers previously not recommended by the Department of Agriculture and the adoption of phylloxera resistant rootstock, such as the Ramsay and Schwartzmann.

The increasing yields have not posed a problem with grape quality because of the reliable supply of high

quality water and long hours of sunshine. These two factors ensure that the fruit normally ripens adequately; something which does not necessarily occur in cooler viticultural areas.

The Riverina has always been at the forefront of viticultural developments in this country, as a result of innovative growers implementing the results generated from the Viticultural Research Station.

Mechanical harvesting was initiated in the Riverina in 1974 by a professional grape grower named Wally Pilosio. This led to subsequent developments such as night harvesting in order to process cooler fruit. Other developments were machine pruning and some minimal pruning.

With machine harvesting, the dense canopies and small grape cluster which result from reduced levels of pruning were no longer a problem. The increasing mechanisation of vineyard operations has also allowed vineyards to become steadily larger, with economies of scale becoming increasingly apparent. Over half the vineyards are machine harvested.

Traditionally furrow and flood irrigation has been used, although more recently, environmental concerns and the increasing cost of water has seen a move back to more sophisticated under-vine irrigation systems and drip irrigation, especially on new vineyard developments.

The rapid expansion of new vineyards in recent years has meant that the percentage of drip irrigation used is approximately now over 20% of total area under vine.

Grape Variety Changes over time

The following table shows how the varietal mix of winegrapes has changed over the past 25 years. The region is expected to produce over 150,000 tonnes of grapes by the year 2000.

GRAPE PRODUCTION SELECTED YEARS
(Griffith, Leeton, Carrathool, Murrumbidgee Shires)

	1972	1980	1990	2000	2006
Cabernet Sauvignon	821	3,595	3,023	10,787	23,626
Chardonnay	46	317	2,460	21,578	59,898
Chenin Blanc		12	40	957	1,200
Colombard		190	3,868	10,041	17,170
Doradillo	5,316	4,440	2,391	312	19
Grenache	4,115	4,013	1,172	568	279
Mataro	485	2,981	1,869	1,511	1,506
Merlot		126	249	7,446	15,650
Muscat Gordo Blanco	4,561	5,888	7,683	6,022	5,057
Palomino	4,224	3,467	1,825	554	36
Pinot Noir		46	711	1,510	2,747
Riesling	125	934	1,280	2,279	5,143
Ruby Cabernet				6,014	12,431
Sauvignon Blanc	3	181	1,207	2,784	3,945
Semillon	13,587	20,223	26,123	35,956	45,935
Shiraz	10,656	15,571	13,357	36,507	63,553
Traminer	15	540	1,485	2,116	5,219
Trebbiano	9,097	20,111	15,190	8,934	3,874
Verdehlo				2,466	6,309
White Frontignac		22	1,097	1,034	88
Other	7,150	4,174	2,858	4,343	21,284
Total	60,201	86,831	87,888	163,719	294,969

An important feature of the Riverina grape industry is that it has been established on the basis of the

production of grapes for wine. Many decades ago the region produced grapes to service the fortified wine, brandy and spirit needs of industry, while more recently the region has adapted to a mix of premium wine grape varieties for table wine. The region produces two-thirds of the Australian Semillon crop as well as large tonnages of Shiraz, Chardonnay and Trebbiano. Currently, the Riverina produces almost 60% of the total New South Wales production and over 15% of the national total.

ROLE OF GOVERNMENT

Because it was founded under the ideals of Closer Settlement, land ownership was restricted to individuals and companies were not entitled to own land. In mid-1997 the NSW Government lifted controls preventing Corporate ownership of land in the irrigation areas.

Environmental issues arising from past irrigation practices are being addressed through the development of the MIA & Districts Land and Water Management Plan. Under this plan, increased emphasis is being placed on whole of farm irrigation planning, improved delivery, reduced surface and subterranean drainage and trading in water allocations.

Around 20% of all farms now use targeted irrigation techniques rather than flood and this proportion will increase over the next few years. None of these matters are likely to impact upon the application.

In 1988 the Wine Grapes Marketing Board, in consultation with the MIA Winemakers Association prepared a definition of the Riverina Region and Sub-regions following a request from the Australian Wine and Brandy Corporation which was seeking regional definitions for wine exports. These terms were registered with the EC at the time.

The definition provided was for the Riverina Region comprising the fourteen shires listed above. A number of sub-regions were also propose, although many of these would not meet GIC requirements for separate registration today.

Under the current application to register the Riverina Region it is not proposed to submit applications for sub-regions.

The Wine Grapes Marketing Board

The Wine Grapes Marketing Board was formed in 1933 under an Act of the New South Wales Parliament as a result of the need for body to represent, advise and lead grape growers in the Murrumbidgee Irrigation Area and adjacent shires. The local government areas under the Board's control are Griffith, Leeton, Carrathool, and Murrumbidgee.

Under the closer settlement policies of the Governments which created the MIA at the turn if the century, ownership of irrigation land was restricted to family enterprises to the extent that corporations were prohibited from owning land and individual holding were limited in size to a "Home Maintenance Area" This was defined as the area of land that would comfortably support a family unit of a man, woman and children.

Despite the passage of time Governments have only recently changed this position and allowed corporations to own land. This has seen to some degree the "lop-sided" development of family industries both in the production and processing levels. The wineries in the MIA as the last bastion of the large scale family winery. The citrus industry too does not enjoy the same level of public company presence as the Sunraysia and SA Riverland. Corporate ownership restrictions have limited the opportunity for vertical integration of grapegrowers into wineries with only four significant ones (Miranda, De Bortoli, Rossetto and Riverina) emerging over the last 65 years.

As a consequence of limits on the size of land-holdings, the area has, until recently, developed as an amalgam of relatively uniform sized farm enterprises. Given farmers' relatively limited capital base and the early years of migration and struggle in the 1930s, grape processing capacity has developed separately from farm ownership. The position today is that the 450 grower enterprises sell their produce to around a dozen medium to large scale wineries.

The WGMB represents “independent” grapegrowers in the MIA and surrounding districts. These growers contribute around one-seventh of Australia’s national winegrape crush. Membership of the Board is five members by popular election and two government nominees.

The Act establishing the Board vests it with ownership of the grape crop and allows it to set minimum prices and terms of payment. The Board no longer processes grapes or sells wine as it has from time to time in the past. It collects a levy from grapegrowers which it spends on matters to advance the interests of the winegrape growing sector.

DEVELOPMENTS IN VINIFICATION IN THE RIVERINA

Wine quality in the Riverina over the last 20 years has been revolutionised by five major developments, refrigeration, stainless steel, ascorbic acid, inert gases and improved equipment.

Refrigeration

The value of refrigeration was always appreciated and winemakers in the 50’s and 60’s used large blocks of ice in an attempt to control the heat of fermentation. The dilution effect was not a problem, as fruit was usually harvested very ripe at around 15°Be.

With the introduction of refrigeration equipment, winemakers were able to clarify juice prior to fermentation, control the rate of fermentation and reduce grape must temperatures at crushing, thus minimising microbial and extraction problems.

Stainless Steel

With the general introduction of stainless steel, winemakers no longer had to worry about contamination resulting from iron or copper pick up from mild steel storage or other metal items in the winery. It also ensured minimal problems with mould contamination and oxidation associated with concrete tank storage.

Ascorbic Acid

The introduction of ascorbic acid as an anti-oxidant was the third improvement. Usage of this acid meant that winemakers were able to substantially reduce the levels of SO₂ whilst greatly raising the degree of protection given to fruit flavours, which is a critical factor in warmer climates.

Inert Gases

Usage of inert gases such as carbon dioxide and nitrogen became widespread, thus minimising the ever present problem of oxidation..

Improved Equipment

Advances in vinification methods was the introduction of “softer” processing equipment, which ensured phenolic extraction, a major problem with whites, was minimised. Equipment such as air bag presses and roller/destemmer crushers greatly improved wine quality.

These were vast improvements when one looks back to the cellar equipment being used in wineries prior to 1968. It consisted mainly of open concrete fermenters with a bundle of canes at the outlet, which served as a strainer. Vinomatics, Potter fermenters and increasing use of smaller fermentation vessels and new oak have seen the quality of winemaking improve markedly over the past few years.

TYPICITY

Semillon

It is rare that a wine style produced in Australia should become a world leader. But this is the case with the Botrytis Semillon wines of the Riverina, which in 2007 celebrates 25 years of production, and look set to continue for another 150 years!

Botrytis is a fungus which infects the grapes during the warm, moist conditions of Autumn causing them to shrivel and lose moisture. The juice from these grapes is extremely luscious producing a wine which is honey sweet with concentrated flavours and texture. This style of wine is rare, with only a handful of regions in the world capable of producing them.

While McWilliam's produced a Botrytis affected Pedro Ximines as early as 1958, the style first rose to prominence with the release of the 1982 De Bortoli Semillon. This wine achieved outstanding success on the show circuit being awarded a total of 45 Gold medals and 10 Trophies throughout the world.

The production and immediate success of the '82 was pivotal for the fortunes of the region as a whole, with most wineries in the region now producing a Botrytis wine. Previously the Riverina had largely been a bulk supplier to outside wine companies with the region gaining very little recognition for the wines produced. Since 1982 the region and its brands have evolved to the point where the Riverina is recognised as a major force in Australian viticulture.

Semillon from the Riverina has the capacity to make 2 very contrasting styles. The first is the Dry Semillon White Wine which when picked above 12 baume benefits from oak maturation. This style typically starts with the lemon citrus aromas which develop and become more honeyed. The palate is typically soft and round. Most Semillon is blended with either Chardonnay or Sauvignon Blanc.

The second style is the complex Botrytis style. This style typically shows strong citrus/orange peel Botrytis character which benefits from oak maturation. The palate is richer and more complex than other regions and although very sweet has a balanced non cloying finish. With bottle maturation the wines develop strong apricot honey style aromas and full smooth palates with an apparently drier finish. For aged styles colour can be golden with an orange hue. Very old wines can be quiet dark in colour with orange hues while still displaying magnificent flavours and structure

Shiraz

The Shiraz grapes from the region when picked around 13Be will give wines of the following style. The aroma is typically of the ripe red plum spectrum of fruit character showing no herbaceous or leafy characters and usually very low in peppery style aromas. This ripe red plum fruit carries onto the palate and gives a rich round soft flavour with medium tannin finish. The wines typically develop into secondary complex characters after 3 years bottle maturation

References

1. Australian Bureau of Statistics
2. Jervis, J. (1952) The Western Riverina – A history of its development. JRAHS.
3. Kelly, B.M (1988) From wilderness to Eden – A history of the city of Griffith, its region and its people. Griffith City Council: Griffith.
4. Ricegrowers' Co-operative Limited.
5. Riverina Citrus Marketing.
6. Riverina Regional Development Board.
7. Ronald, R.B. The Riverina: people and properties.