

ALTERNATIVE VARIETIES

April Winckel – Murray Valley Winegrowers' Inc., Gregory Moulds – NSW Primary Industry

“Alternative Varieties” has been a buzz word in the industry but how climatically or economically suitable are they really? The wine grape industry has been struggling and growers are unsure of their options. What varieties can be grown successfully in the Murray Valley? What is the best way to change varieties and how do alternative varieties compare to current varieties?

The Trial

A trial was established at the Dareton Research Institute to demonstrate the suitability of alternative varieties for this region and the reworking methods to establish them. Sixteen varieties were selected for establishment, (8 reds and 8 white). The varieties which included standard varieties for comparison are as follows:

White Grapes: Arneis, Fiano, Vermentino, Sauvignon Blanc, Savignin (formally Albarino), Viognier, and Muscat Gordo Blanco.

Red Grapes: Pinot Gris, Graciano, Lagrein, Montepulciano, Pinotage, Tannat, Tempranillo, Shiraz and Cabernet Sauvignon.

The trial site was 0.6 ha planted to Chardonnay on Ramsey in 1995. The block also contained two rows of six different rootstocks, used in a previous trial providing the opportunity to examine the rootstock effect on the alternative varieties.

The vines are planted 3.3 metre rows with 2.4 metre vine spacing on a two wire vertical trellised and boxed pruned. The soil is a sandy loam varying in depth 70-105 cm with an active root depth of 40-75 cm. The vines are irrigated with drippers spaced every 50 cm. Nutrition is applied by fertigation and a routine foliar programme.



Two methods of reworking were used, grafting a bud into the rootstock and grafting into the trunk, and see

picture to the left. The losses were highest in vines reworked into the rootstock.

Early key observations

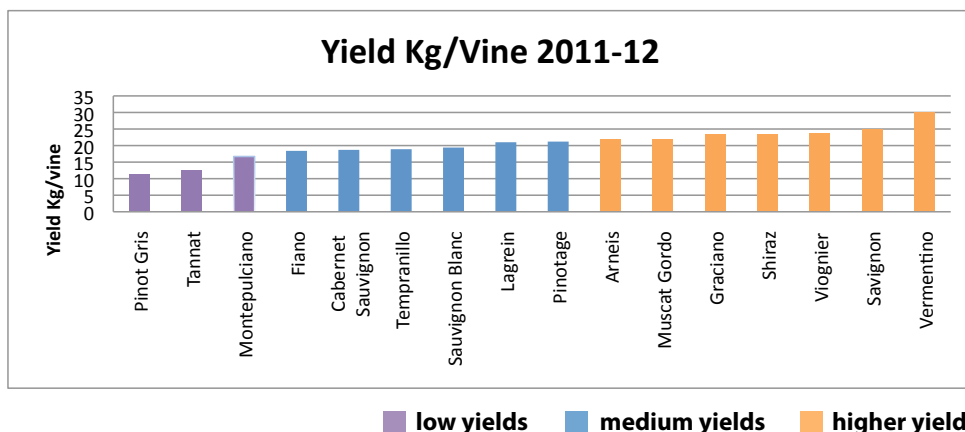
- Savignin and Montepulciano required the most vines re-budded.

- Pinot Gris, Lagrein, Pinotage, Montepulciano and Tannat suffered the most canopy roll in the first two seasons of establishment and required the largest amount of training during the season.
- The yield of Muscat Gordo, Arneis, Pinot Gris and Montepulciano budded into the rootstock were less than 50% of those into the trunk in the first season.

Yield

The first year yield was drastically reduced by botrytis. The graph of the second year (2011-12) indicates the yields of all varieties can be split into three levels: low, low to medium and high yielding varieties.

The poor performance or lowest yielding varieties were Pinot Gris, Tannat & Montepulciano. In general the yields obtained would be considered lower than district averages because of the single wire trellising. The varieties Tannat and Pinot Gris produced **low yields** due to poor canopy development and suffered from waterlogging of soil and root zone. The **medium** yielding varieties include Fiano and Tempranillo produced yields comparable to Cabernet Sauvignon. There was no reduction in Fiano yield from bunch rots. Of the remaining **higher** yielding varieties Graciano and Vermentino had the lowest percentage of fruit with sunburn or fruit rots.

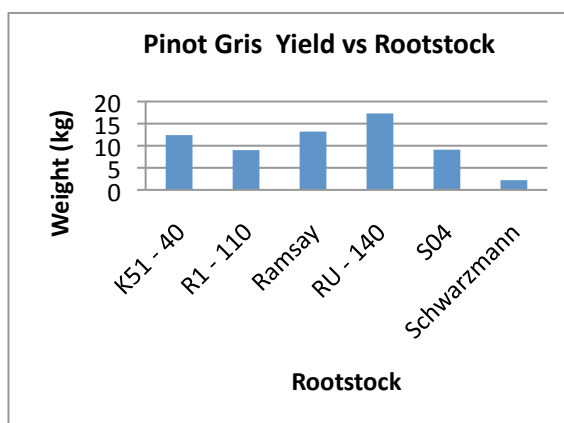
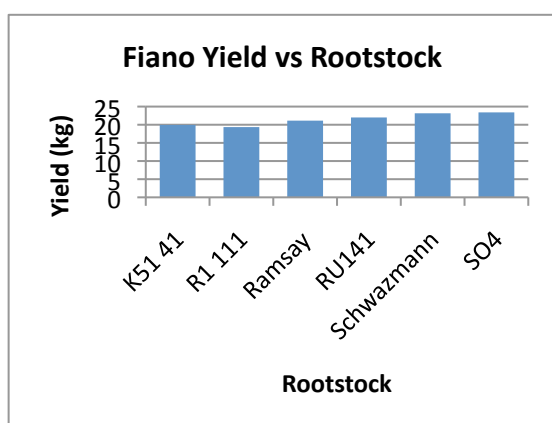


Rootstock

In addition to the rows planted on Ramsey, Pinot Gris and Fiano were reworked into the trunk on the following rootstocks: Ramsey, Schwarzmann, Ruggeri 140, K51-40, and SO4.

The yields in the first year of Pinot Gris and Fiano varied by 37% between best and worst rootstocks. The second year results (2011-2012) are shown in the graphs below. Fiano yield shows no

significant difference between the selections of rootstocks. Pinot Gris yield difference of 87% between best and worst performing rootstock suggests a higher vigour rootstock may be important. Insufficient number of vines were measured to guarantee accurate results therefore no rootstock choice should be based on these results.



The Alternative Varieties

Below are comments and results from the trial for the different varieties

WHITE VARIETIES



Arneis

Arneis is erect, has high vigour with thin spindly shoots and medium sized leaves. This variety has grown well after a slow start in the first season. The fruit is spread evenly throughout the canopy and is easy to pick. This variety has a compact bunch that has performed better than expected, yielding in the high range.

Origin	Italy	Disease susceptibility	Moderate
Vigour	High	Bunch weight (g)	209
Juice Baume	13	Bunch compaction	Tight compact
Juice TA	5.9	Fruit yield (kg/vine)	22.0
Juice pH	3.5	Equivalent yield (t/ha)	26.4

Fiano

This variety is erect and is highly vigorous with long shoots, large leaves which appears to be well suited to the Murray Valley climatic conditions experienced since establishment. The only points of concern are that some vines show hen & chicken or produce small bunches of 2nd crops. Fiano has loose bunches of small berries of consistent quality and has good disease resistance.

Origin	Italy	Disease susceptibility	Low
Vigour	High	Bunch weight (g)	149
Juice Baume	12.3	Bunch compaction	Loose
Juice TA	8.2	Fruit yield (kg/vine)	18.4
Juice pH	3.3	Equivalent yield (t/ha)	22.1





Vermentino

Vermentino is an erect, highly vigorous variety producing long canes with large wavy leaves and appears well suited to the Murray Valley climatic conditions. The vines have grown well in very hot spring and summer. The variety produced the highest yield and the largest bunches of all varieties in both seasons.

Origin	Italy	Disease susceptibility	Low
Vigour	High	Bunch weight (g)	262
Juice Baume	11.7	Bunch compaction	Loose
Juice TA	6	Fruit yield (kg/vine)	30.0
Juice pH	3.5	Equivalent yield (t/ha)	36.0



Savignin (formally Albarino)

Savignin is semi erect, with consistent medium to high yield. Bunch management is required to reduce losses of fruit due to bunch rot. This variety appears to be suitable for the Murray Valley climatic conditions and may benefit from a different trellis.

Origin	French	Disease susceptibility	Medium
Vigour	High	Bunch weight (g)	128
Juice Baume	11.1	Bunch compaction	Tight
Juice TA	7.1	Fruit yield (kg/vine)	24.9
Juice pH	3.4	Equivalent yield (t/ha)	29.9



Viognier

Viognier are medium vigour vines, producing medium size, long cylindrical bunches of loose berries. Bunch rot caused very little damage to the fruit. In the 2011-12 season fruit dehydrated and bunches were soft; which may have been due to water stress just prior to harvest.

Origin	French	Disease susceptibility	Medium -High
Vigour	Medium	Bunch weight (g)	146
Juice Baume	11.9	Bunch compaction	Compacted and loose
Juice TA	5.6	Fruit yield(kg)/vine	23.8
Juice pH	3.7	Equivalent yield (t/ha)	28.6



Muscat Gordo

Gordo is not an alternative variety as it is commonly grown in the Murray Valley. It has been included to enable comparison. All Gordo vines budded directly on to Ramsey rootstock showed incompatibility and produced few bunches suitable for harvest. Most bunches were damaged by sunburn or did not mature.

Origin	Egypt	Disease susceptibility	Low
Vigour	Low to Medium	Bunch weight (g)	190
Juice Baume	13.1	Bunch compaction	Loose
Juice TA	4.1	Fruit yield (kg/vine)*	22.0
Juice pH	3.8	Equivalent yield (t/ha)	26.4

**The majority of yield is from vines budded into scion wood, and has a higher bunch weight compared to average per vine.*

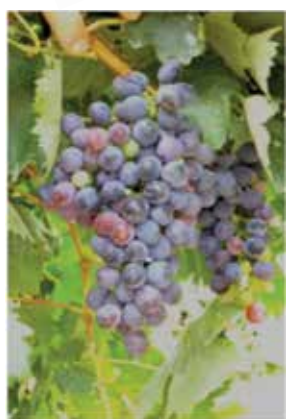
RED VARIETIES



Graciano

This variety is erect and highly vigorous with long canes, large leaves and appears well suited to the Murray Valley conditions. Graciano was the best red variety at establishment losing no vines in hot spring summer. This variety produced the largest bunches of the red varieties and has small berries.

Origin	Spain	Disease susceptibility	Low - Moderate
Vigour	High	Bunch weight (g)	239
Juice Baume	11.1	Bunch compaction	Loose
Juice TA	5.2	Fruit yield (kg/vine)	23.3
Juice pH	3.7	Equivalent yield (t/ha)	28.0
		Colour (mg/g)	0.93



Montepulciano

This variety is the latest to colour and to harvest. Vines produced light crops of loose bunches that have tough skin that appear resistant to bunch rots. Montepulciano produced low to medium yields of good quality fruit and good colour.

Origin	Italy	Disease susceptibility	Low
Vigour	Medium	Bunch weight (g)	144
Juice Baume	12.2	Bunch compaction	Loose
Juice TA	6.6	Fruit yield (kg/vine)	16.7
Juice pH	3.6	Equivalent yield (t/ha)	20.0
		Colour (mg/g)	1.45



Lagrein

Lagrein appears to grow well and is suited to the Murray Valley conditions experienced since establishment. The very drooping canopy has spindly deep green canes, medium to large leaves that protect and support the fruit which is evenly spread under the canopy. The fruit is subject to bunch rot in wet seasons and needs further evaluation.

Origin	Italy	Disease susceptibility	High
Vigour	Medium - high	Bunch weight (g)	179
Juice Baume	11.7	Bunch compaction	Loose
Juice TA	6.3	Fruit yield (kg/vine)	21.0
Juice pH	3.7	Equivalent yield (t/ha)	25.2
		Colour (mg/g)	1.2



Pinotage

Pinotage has coped well with Murray Valley conditions experienced since establishment. Pinotage canopies tend to have 2-3 bunches per shoot. The bunches are small-medium with compact oval berries.

Origin	South Africa	Disease susceptibility	Moderate
Vigour	Medium - High	Bunch weight (g)	127
Juice Baume	13.1	Bunch compaction	Tight
Juice TA	5.2	Fruit yield (kg/vine)	21.2
Juice pH	3.7	Equivalent yield (t/ha)	25.4
		Colour (mg/g)	0.61



Tannat

This variety is slightly erect and highly vigorous with long canes and medium to large leathery leaves which roll backwards. Tannat was the most difficult to train and develop a full canopy due to its tendency to roll. Fruit production does not reflect its true potential due to the seasonal conditions resulting in poor growth and production. Problems of excessive vigour, vine death and low yield indicate Ramsey is not a suitable rootstock for Tannat.

Origin	French	Disease susceptibility	Medium - Low
Vigour	High	Bunch weight (g)	195
Juice Baume	12.3	Bunch compaction	Very tight
Juice TA	6.3	Fruit yield (kg/vine)	11.3
Juice pH	3.4	Equivalent yield (t/ha)	15.1
		Colour (mg/g)	1.84



Tempranillo

Tempranillo's well-developed canopy provides protection and supports the fruit which is often in clumps spread throughout. Where fruit lacks leaf coverage or it is in clumps on the end of canes, can suffer poor colour development and sunburn. Unfortunately it is highly susceptible to bunch disease. Fruit takes the longest to reach the required Baume.

Origin	Spain	Disease susceptibility	High
Vigour	High	Bunch weight (g)	199
Juice Baume	12.7	Bunch compaction	Well filled
Juice TA	5.1	Fruit yield (kg/vine)	18.9
Juice pH	3.8	Equivalent yield (t/ha)	22.7
		Colour (mg/g)	0.91



Pinot Gris

Pinot Gris was the worst performer; it is difficult to manage with spindly growth, variable canopy and vine death due to poor vigour. This variety also had the highest number of dry bunches at harvest.

Origin	French	Disease susceptibility	Moderate-High
Vigour	Low	Bunch weight (g)	92
Juice Baume	12.3	Bunch compaction	Tight
Juice TA	5.7	Fruit yield (kg/vine)	11.3
Juice pH	3.5	Equivalent yield (t/ha)	13.6



Shiraz

These vines are highly vigorous and produce fruit that is low in colour with large berries.

Origin	French	Disease susceptibility	Medium
Vigour	Very High	Bunch weight (g)	176
Juice Baume	12.3	Bunch compaction	Loose
Juice TA	4.8	Fruit yield (kg/vine)	23.3
Juice pH	3.7	Equivalent yield (t/ha)	28.0
		Colour (mg/g)	0.54



Cabernet Sauvignon

These vines had medium vigour taking longer to establish. Fruit produced were medium size bunches of loose berries and were not susceptible to bunch rots.

Origin	French	Disease susceptibility	Low
Vigour	Medium	Bunch weight (g)	136
Juice Baume	11.4	Bunch compaction	Loose
Juice TA	6.6	Fruit yield (kg/vine)	19.4
Juice pH	3.6	Equivalent yield (t/ha)	22.4
		Colour (mg/g)	0.46

Conclusion

Reworking of Chardonnay vines on Ramsey to alternative varieties appears to be successful and vines are returning to productive levels after two seasons. The varieties that are most suitable to the area having preformed best over the past two seasons are Fiano, Vermentino and, Garciano. Graciano has performed very well and is considered a good prospect for the Murray Valley.

Sauvignon Blanc, Savagnin, Arneis, Lagrein, Tempranillo are considered less suitable due vegetative growth management and the high susceptibility to bunch rots.

For further information contact Gregory Moulds, NSW Primary Industry 50198412 or 0427311445

Vines reworked to Muscat Gordo, Tannat, Montepulciano and Shiraz were considered to be less suitable to reworking onto Ramsey rootstock.

