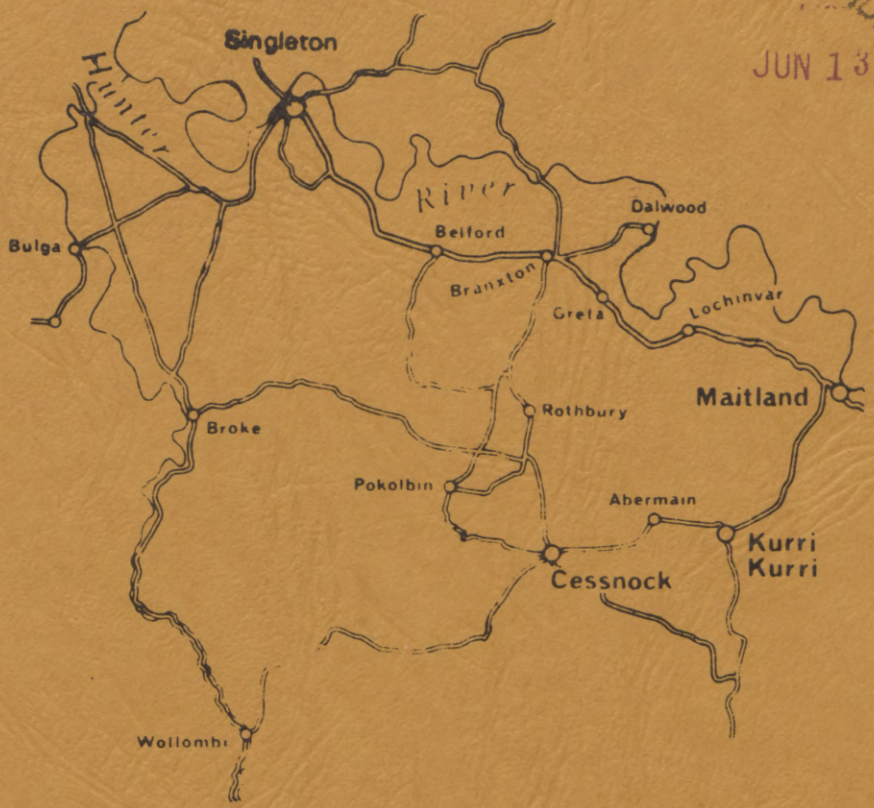
Wine Grape Production

115 Hectare ; Un-irrigated
VINEYARD
LOWER HUNTER



Local Consensus Data Report

- A CONSENSUS OF COSTS & RETURNS

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MID COAST & HUNTER REGION * N.S.W. DEPARTMENT OF AGRICULTURE

THE LOCAL CONSENSUS DATA TECHNIQUE

Today's economic climate bears hard on primary producers; wine grape producers are no exception. Inflating costs and narrowing profit margins make it increasingly important to keep a careful watch on all production costs.

The L.C.D. or Local Consensus Data technique is a way of obtaining an accurate picture of costs and returns for a particular farming system in a particular locality.

A small group of interested farmers, experienced in a type of farming, meet with officers of the Department of Agriculture to discuss all the practices which have a bearing on the costs and returns of a typical farm in the farming system being studied.

As discussion proceeds, a consensus of opinion, or agreement, is reached on the size and nature of the typical farm and on all aspects of production such as cultural operations, machinery used and time involved. Consensus is arrived at about prices or costs of inputs, normal yields, and expected returns.

It is important to realise that the figures published in these reports are not average figures, but typical figures for farmers represented by the group who provided the data.

Typical figures are in many ways more realistic than average figures. Averages can be biased by unusual or radically different practices which calls for a knowledge of the range of inputs making up the total and a high degree of skill in interpreting the results.

Care must still be taken in applying the figures contained in this report to individual cases. You can be sure, however, that the information in this report has been agreed to by a group of experienced, practicing vignerons on the assumption that they apply to a typical vineyard being operated at a reasonable standard of management in the Hunter Valley.

The management procedures in this report are a consensus of opinion of current practices. They do not necessarily represent or imply any recommendation of the Department of Agriculture.

THANKS

It would not have been possible to produce this consensus report without the valuable assistance of those Hunter Valley vignerons who participated. They were unstinting in giving us both their time and valuable information from their experience.

WINE GRAPE PRODUCTION

115 Hectare Unirrigated Vineyard

LOWER HUNTER

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LOCAL CONSENSUS DATA REPORT

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December, 1975

CONTENTS

INTRODUCTION

CLIMATE

The climate of the Hunter Valley is intermediate between the Mediterranean climate of Southern Australia with its winter rainfall and summer droughts, and that of Northern Australia with a summer rainfall and winter drought. The climate of the area is therefore erratic; it is greatly affected by the direction from which the major climatic influences come.

The average rainfall for Pokolbin is 763 mm and nearly half of this falls during December to March. There is a pronounced drought during the period July to August when only 18% of the annual average rain falls. The hottest months are December to February with the maximum temperature averaging 24^{o}C at Pokolbin. A frost-free period of 7 months is usual for the Hunter Valley.

VARIETIES PLANTED

The Hunter Valley has a reputation for producing distinctive, high quality table wines. This reputation has, basically, been built on two varieties: Semillon for white wines and Shiraz for reds. In the Hunter Valley, both these consistently produce rich, flavoursome wines which have a unique regional style and character. Shiraz and Semillon account for 47.5% and 24.3% respectively, of the total Hunter Valley plantings.

With the rapid expansion of Hunter Valley vineyards, a number of other high quality varieties have also been planted in the region. Of these, the famous Cabernet Sauvignon variety from the Bordeaux region in France has already demonstrated that in the Hunter Valley it can produce top quality red wines of distinctive fruitiness and high colour. Chardonnay, the variety which produces the famous white wines of the Burgundy, Chablis, and Champagne regions of France, is showing tremendous promise for the Hunter.

A great many other varieties, among them Pinot Noir, Rhine Riesling, Sauvignon Blanc and Traminer, are now planted in the Hunter Valley. These varieties produce top quality table wines in other parts of the world and are now producing wines of a similar quality in this area.

YIELDS

Production on different vineyards ranges from 1.2 to 14.8 tonnes per hectare (0.5 to 6 tonnes per acre). Substantial year-to-year variation in the whole district occurs as a result of drought, heavy rainfall at vintage, management and other factors.

The average yield of wine grapes from Hunter Valley vineyards is 3.7 to 5 tonnes per hectare (1.5 to 2 tonnes per acre) over the last couple of years.

VINEYARD SIZE

A total of 83 growers in the Hunter Valley cultivate 4 186 hectares (10 344 acres) of grapes and vineyard size ranges from 5 to 470 hectares (12 to 1 160 acres). However, 22 of the growers (just over a quarter) have 85% (3 444 ha or 8 510 acres) of the total plantings.

IRRIGATION

About one third of the area of wine grapes grown in the Hunter Valley is irrigated and most of this is in the Upper Hunter. Smaller vineyards in the Lower Hunter generally do not irrigate.

WINEMAKING

All but one of the 27 wineries in the Hunter Valley are associated with a vineyard as part of the total enterprise.

THE TYPICAL VINEYARD

By consensus of opinion the group decided on the following description of the typical large vineyard in the Lower Hunter (Pokolbin). The vineyard has its own winery:-

1. VINEYARD AREA

Area planted with vines: ..... 100 ha (250 acres)

Area taken by roads, waterways, headlands and buildings: ..... 15 ha (35 acres)

Total Production Area: ..... 115 ha (285 acres)

An additional area of 61 ha (150 acres) is not used for wine grape production but some of it may be planted at a later date.

2. GRAPE VARIETIES

Our typical vineyard has the following varieties:-

Shiraz	52 ha	(130 acres)	52%
Semillon	33 ha	(82.5 acres)	33%
Cabernet Sauvignon	10 ha	(25 acres)	10%
Rhine Riesling	3 ha	(7.5 acres)	3%
Other*	2 ha	(5 acres)	2%
	100 ha	(250 acres)	100%

* Includes small areas of Traminer, Trebbiano and Chardonnay.

Planting started in 1969/70 and all of the vines would have been planted by 1972. Thus, all the vines are at their full production potential.

The Shiraz vines are planted at 3.4 m x 1.8 m (11 ft x 6 ft) and the remainder of the vines are planted at 3.4 m x 1.5 m (11 ft x 5 ft) to give an average planting density of 1790 vines per hectare (725 vines per acre). The total number of vines planted is therefore around 180 000.

3. IRRIGATION

Typically this size vineyard in the Lower Hunter would not be irrigated.

4. TRELLISING

Our typical Lower Hunter vineyard uses a single wire trellis with the fruiting wire 1.1 m (3½ ft) above ground level with a foliage wire 300 mm (12 in) above the fruiting wire. The trellis would have cost around $87 500 for 100 hectares @ $875 per hectare (250 acres @ $350).

5. BUILDINGS

Two houses are provided for employees (vineyard manager and winemaker) at a cost of $14 000 each. The capital cost of the winemaker's house is not included in the vineyard costs : it is considered as a cost to the winery of $14 000.

Cost of the winery itself, fully equipped, is estimated at $300 000.

Machinery storage, a fully equipped workshop, and staff amenities such as dining room and showers, are provided in two large sheds costing around $12 000 in total. Mobile toilets and shed for use by employees out in the vineyard are also provided at a cost of about $1 000.

Total cost of buildings is therefore around $27 000 (excluding the winery and winemaker's house).

6. LABOUR

Labour requirements of our typical vineyard are mostly met by permanent employees, but a significant quantity of casual labour is employed during pruning and harvesting.

Because of its size, the vineyard permanently employs a manager, winemaker, foreman and 5 tractor drivers. The labour costs stated on Page 11 include paid annual holidays and 17½% leave loading. Obviously, if labour costs continue to increase, the reader should take this into account. Wages and salaries quoted on Page 11 are current as of July, 1975.

An office girl is employed by both the vineyard and the winery. It is estimated that half her time is spent on vineyard matters, so half her annual salary has been included on Page 11.

7. PLANT AND MACHINERY

Here is a list of plant and machinery to be found on our typical Lower Hunter vineyard of 115 hectares. Prices used are approximate 1975 listings for new machinery.

Item	*Description*	*New Cost 1975 $*
Tractor	1 of 45 kW (60 hp)	8 000
Tractors	3 of 30-45 kW (40-60 hp) @ $6 000 ea	18 000
Disc Harrows	2 of 16 plate @ $800 ea	1 600
Chisel Plough	2 of 5 tyne @ $550 ea	1 100
Scarifier	2.1 m (7 ft)	800
Rotary Hoe	1.5 m (60 in)	1 700
Slasher	1.8 m (6 ft)	1 200
Cut-off ploughs	2 @ $1 050 ea	2 100
Trailer	3 tonne flat top	300
Herbicide sprayer	1 135 litre (200 gal) trailing	1 900
Mister	2 of 450 litre (100 gal) TPL @ $3 000 ea	6 000
Fertilizer spreader	300 kg (6 cwt)	550
Vine trimmer		1 100
Pruning equipment	2 of 4 gun pneumatic @ $1 200 ea	2 400
Ripper		150
Scare guns	5 @ $300 ea	1 500
Grader blade		300
Mechanical harvester	PTO driven	34 000
Harvesting trailers	4 @ $600 ea	2 400
Harvesting bins	8 of 2 tonne @ $600 ea	4 800
Car (manager)		5 500
Utility		4 500
Truck *	3 tonne (½ winery, ½ vineyard) Second hand	2 000
Sundries	Shovels, hoes, pumps, hoses etc.	5 000
Total		106 900

* *The truck is valued at $4 000 and is used by the winery and the vineyard so 50% of the cost is assigned to each.*

8. CAPITAL INVESTED

The total capital invested in this vineyard is $6 425 per hectare ($2 600 per acre). Obviously, the cost of establishing a similar vineyard today would be much higher. A figure of $8 000 to $10 000 per hectare ($3 200 to $4 000 per acre) would be reasonable today.

115 ha @ $6 425 per hectare* (285 acres @ $2 600 per acre) This includes land, machinery, buildings, vines, trellising and roads	$741 000
61 ha @ $247 per hectare* (150 ac @ $100 per acre)	$15 000
TOTAL VINEYARD INVESTMENT	$756 000

* *These figures are not exact due to rounding in metric conversion.*

This report does not investigate the profitability of the winery side of the enterprise. It is only concerned with the economics of the vineyard to the stage where the grapes enter the winery. This approach has been taken for two reasons: firstly, vignerons agree that the vineyard must be able to make a profit on its own. Secondly, the economics of a winery are too involved to include in this report, a completely separate study is needed.

MANAGEMENT PRACTICES

The following viticultural practices would be carried out on our typical large unirrigated Lower Hunter vineyard.

1. PRUNING

Traditionally, the most widely used pruning system in the Hunter Valley is the Bordelaise Espalier (cane) system. This system would be used on our typical vineyard. Some permanent staff and a significant quantity of additional casual labour would prune the vineyard. The pruning rate would be approximately 270 vines per person per day. Wrapping and tying is carried out by casual labour at an average rate of 800 vines per person per day. The cost of pruning, wrapping and tying would be about 11 cents per vine or $197 per hectare ($80 per acre).

2. VINE TRAINING

During late spring, the canes for the production of the following season's crop are wrapped onto the foliage wire. The wrapping-in operation is done at an average rate of 0.4 hectares (1 acre) per person per day. The vines would also be desuckered by casual labour at an average rate of 0.6 hectares (1½ acres) per person per day. Subsequently, excessive growth is controlled by mechanical topping twice during the season.

3. PEST AND DISEASE CONTROL

Spraying for pest and disease control is done by two 450 litre (100 gallon) P.T.O. driven, three-point linkage mounted misters. Aerial spraying is used when conditions are unsuitable for ground equipment (e.g. after heavy rain).

Downy Mildew

There is no other viticultural district in Australia where downy mildew is such a problem. To control it, six to eight applications are usually made each season. In wet seasons, however, as many as 15 sprays may be needed. Our typical vineyard uses two applications of captafol (Difolitan (R)) followed by six sprays, alternately Mancozeb (Dithane M45 (R)) and copper oxychloride/zineb (Copper Curit (R)).

The captafol and mancozeb are applied at the rate of 1.5 kg per hectare (1½ lb per acre), whilst the copper oxychloride/zineb sprays are at the rate of 2 kg per hectare (2 lb per acre).

Black Spot

Outbreaks of black spot are rare but control measures are applied annually using Ziram at the rate of 1.25 kg per hectare (1¼ lb per acre).

Bunch Rots

Crop losses from bunch rots occur in susceptible varieties on average once every three years. In order to reduce the incidence of bunch rots three applications of benomyl (Benelate (R)) would be applied at the rate of 0.5 kg per hectare (½ lb per acre). These sprays are applied to half the total area i.e. all the Semillon and a proportion of the Shiraz plantings.

Powdery Mildew

Three wettable sulphur sprays are applied at 2 kg per hectare (2 lb per acre) to control powdery mildew. Wettable sulphur also controls vine mites. These sprays are combined with some of the downy mildew sprays.

Vine Mites

Considerable damage can be caused by Vine Moth. One control spray of carbaryl at the rate of 1.25 kg per hectare (1¼ lb per acre) is applied during the season in conjunction with a downy mildew spray.

Birds

In some seasons the damage caused by birds can be quite considerable. Five scare guns are used to reduce the damage by birds. In the seasons where birds are a particular problem up to $1 000 can be spent in shooting expenses during vintage.

4. SOIL MANAGEMENT

Soil management and weed control in the vineyard are very important for the conservation of soil moisture. In the inter-row area it is normal to cultivate six times per annum. Cultivation is mainly by discing, chisel ploughing and scarifying.

Under vine weed control is achieved by one cutting-off and one throwing-on in the late winter and early spring. These operations are carried out with offset implements, mid-mounted on a tractor. One spray of paraquat and diquat combined is applied to a 1.2 metre (4 ft) band under the vine at the rate of 1.4 litres of each per sprayed hectare (1 pint per sprayed acre). One spray of amitrole and 2,2-DPA would be applied in areas where persistent perennial weeds occur. These chemicals would be applied at the recommended rates.

5. HARVESTING

Harvesting is done with a mechanical harvester operating for 12 hours per day. At this rate, the machine harvests an average of 4.8 hectares (12 acres) a day.

COSTS OF WINE GRAPE PRODUCTION

ANNUAL VINEYARD OVERHEAD COSTS		$
Council Rates and Land Tax		1 250
Insurance Premiums		
- Workers Compensation and Accident Payment Insurance	10 460	
- Houses and Sheds	160	
- Machinery (fire only)	310	
- Motor vehicles (includes 50% of truck)	594	
- Public Risk	250	11 774
Payroll Tax		3 160
Motor Vehicles Registration and Road Tax (includes 50% of truck costs)		306
Office and Stationery Expenses		300
Telephone		700
Bank Charges (not including interest)		300
Accountancy Charges		1 500
Miscellaneous Fees, Licences, Subscriptions etc.		350
Labour		
- Manager	14 000	
- Foreman	7 000	
- 5 Permanent Tractor Drivers	30 000	
- Office Girl (50% to Vineyard)	3 000	54 000
TOTAL (Carried forward)		$73 640

ANNUAL VINEYARD OVERHEAD COSTS - Continued

TOTAL (from previous page) $73 640

Depreciation - Plant and Machinery

	1975 New Value $	Expected Life (years)	Trade-in Value $	Depreciation $	
Tractors - 45 kW (60hp)	8 000	5	3 000	1 000	
" - 30-45 kW (40-60hp)	18 000	5	6 000	2 400	
Car	5 500	3	3 000	833	
Utility	4 500	3	1 000	1 167	
Truck (50% for vineyard)	2 000	10	200	180	
Mechanical Harvester	34 000	5	3 400	6 120	
Harvesting Trailers	2 400	15	240	144	
" Bins	4 800	10	480	432	
Disc Harrows	1 600	6	160	240	
Chisel Plough	1 100	10	110	99	
Scarifier	800	10	80	72	
Rotary Hoe	1 700	5	170	306	
Slasher	1 200	5	120	216	
Cut-off Ploughs	2 100	5	210	378	
Trailer	300	10	30	27	
Herbicide Sprayer	1 900	10	190	171	
Mister	6 000	10	600	540	
Fertilizer Spreader	550	10	55	50	
Pruning Equipment	2 400	6	240	360	
Vine Trimmer	1 100	10	110	99	
Ripper	150	15	15	9	
Scare Guns	1 500	10	150	135	
Grader Blade	300	15	30	18	
Sundries - Fire Pumps & Motors - Tools - Hoses - Workshop Equipment	5 000	15	500	300	
					$15 296

TOTAL VINEYARD OVERHEAD COSTS $88 936

ANNUAL VINEYARD RUNNING COSTS

Repairs & Maintenance to Plant and Machinery	$	
Tractors 45 kW (60hp)	800	
" 30-45 kW (40-60hp)	2 400	
Car	500	
Utility	500	
Truck (50% to vineyard)	250	
Mechanical Harvester	2 000	
Harvesting Trailers	120	
" Bins	400	
Disc Harrows	300	
Chisel Plough	200	
Scarifier	60	
Rotary Hoe	250	
Slasher	50	
Cut-off Plough	100	
Trailer	25	
Herbicide Sprayer	100	
Mister	150	
Fertilizer Spreader	30	
Pruning Equipment	1 000	
Vine Trimmer	50	
Ripper	-	
Scare Guns	150	
Grader Blade	10	
Sundries - Fire Pumps & Motors) - Tools) - Hoses) - Workshop Equipment)	500	$9 945

Repairs and Maintenance to Buildings	$	
House	600	
Sheds	100	
Misc. Sheds, Toilets etc.	100	$800

Repairs and Maintenance to Vineyard	$	
Fences	100	
Trellising	1 000	
Vines	-	
Roads and Waterways	250	$1 350

TOTAL (Carried forward) $12 095

ANNUAL VINEYARD RUNNING COSTS - Continued

TOTAL (from previous page)		$12 095
Fuel and Lubricants	$	
Diesel	1 700	
Petrol	1 155	
Oils and Greases	800	$3 655
Casual Labour (for pruning and vine training)		$30 000
Chemicals	$	
Herbicides		
Paraquat (1.4 l/ha) 50 l @ $6.77/l	339	
Diquat (1.4 l/ha) 50 l @ $6.70/l	335	
Fungicides		
Ziram (1.25 kg/ha - 1 spray)		
125 kg @ $0.79/kg	99	
Difolitan (R) (1 kg/ha - 2 sprays)		
200 kg @ $4.94/kg	988	
Copper Curit (R) (2 kg/ha - 3 sprays)		
600 kg @ $3.16/kg	1 896	
Dithane M45 (R) (15 kg/ha - 3 sprays)		
450 kg @ $2.65/kg	1 193	
Wettable Sulphur (2 kg/ha - 3 sprays		
600 kg @ $0.67/kg	402	
Benelate (R) (0.5 kg/ha -3 sprays, ½ area)		
75 kg @ $18.15/kg	1 361	
Insecticides		
Lime Sulphur (22 l/ha - 1 spray)		
2 200 l @ $0.21/l)	462	
Carbaryl (1.25 kg/ha - 1 spray)		
125 kg @ $3.68/kg	460	
Wetting Agent		
110 l @ $1.26/l	139	$7 674
Fertilizer		
Nitrophoska (waterways and areas of poor soil)		
4 tonne @ $300/tonne		$1 200
TOTAL VINEYARD RUNNING COSTS		$54 624

SUMMARY OF PRODUCTION COSTS*

	Cost per Hectare $	*Cost per Acre $*	Total Cost 115 ha $
Overhead Costs			
Labour	469	*189*	54 000
Depreciation	133	*54*	15 296
Other Overhead Costs	171	*69*	19 640
Total Overhead Costs	773	*312*	88 936
Running Costs			
Repairs and Maintenance	105	*43*	12 095
Fuel and Lubricants	32	*13*	3 655
Casual Labour	261	*105*	30 000
Chemicals	67	*27*	7 674
Other Running Costs	10	*4*	1 200
Total Running Costs	475	*192*	54 624
TOTAL VINEYARD COST	1 248	*504*	143 560

* Rows and columns may not total due to rounding.

GROSS INCOME FROM WINE GRAPES

The group felt that the average yields for this typical large, unirrigated, Lower Hunter vineyard would be:-

Shiraz	4.3 tonnes per hectare	(1.75 tonnes per acre)
Semillon	5.0 " " "	(2.0 " " ")
Cabernet Sauvignon	3.7 " " "	(1.5 " " ")
Rhine Riesling	4.3 " " "	(1.75 " " ")
Other	3.7 " " "	(1.5 " " ")

Premium quality fruit would be charged to the winery at $300 per tonne.

Gross income for this typical vineyard would therefore be:-

Shiraz	52 hectares @ 4.3 tonnes per hectare @ $300 per tonne	$67 080
Semillon	33 hectares @ 5.0 tonnes per hectare @ $300 per tonne	$49 500
Cabernet Sauvignon	10 hectares @ 3.7 tonnes per hectare @ $300 per tonne	$11 100
Rhine Riesling	3 hectares @ 4.3 tonnes per hectare @ $300 per tonne	$ 3 870
Other	2 hectares @ 3.7 tonnes per hectare @ $300 per tonne	$ 2 220
TOTAL GROSS INCOME		$133 770

PROFITABILITY OF WINE GRAPE PRODUCTION

Using costs and returns arrived at by group consensus, the profitability of our typical large, unirrigated, Lower Hunter vineyard is estimated to be as follows:-

	TOTAL GROSS INCOME (vigneron's estimates)	$133 770
less	TOTAL OVERHEAD COSTS	$ 73 640
less	TOTAL RUNNING COSTS	$ 54 624
	NET VINEYARD INCOME FROM WINE GRAPES	$ 5 506
less	DEPRECIATION	$ 15 296
	NET RETURN TO CAPITAL before tax	-$ 9 790

Return on Capital Invested in the Vineyard

$$\frac{-9\ 790 \times 100}{\$756\ 000} = -1.3\%$$

By way of comparison, if wine grape growing profitability is estimated using average Hunter Valley yields our typical vineyard would break even.

The average yields for the Hunter Valley are for the 1974 and 1975 vintages and are biased downwards by a number of factors. The significant number of young vines which have not yet reached maximum production is the main cause of the bias.

Using these average yields the gross income from our typical vineyard would be:-

Shiraz	52 hectares @ 4.8 tonnes per hectare @ $300 per tonne	$74 880
Semillon	33 hectares @ 5.2 tonnes per hectare @ $300 per tonne	$51 480
Cabernet Sauvignon	10 hectares @ 3.7 tonnes per hectare @ $300 per tonne	$11 100
Rhine Riesling	3 hectares @ 4.3 tonnes per hectare @ $300 per tonne	$3 870
Other	2 hectares @ 4.3 tonnes per hectare @ $300 per tonne	$2 580
TOTAL GROSS INCOME		$143 910

The profitability would therefore be:-

	TOTAL GROSS INCOME (1974, 1975 H.V. average)	$143 910
less	TOTAL OVERHEAD COSTS	$73 640
less	TOTAL RUNNING COSTS	$54 624
	NET VINEYARD INCOME FROM WINE GRAPES	$15 646
less	DEPRECIATION	$15 296
	NET RETURN TO CAPITAL	$350

Return on Capital Invested in the vineyard:-

$$\$\frac{350 \times 100}{756\ 000} = 0.05\%$$

CONCLUSIONS

1. Production of wine grapes on this typical large Lower Hunter Valley vineyard is shown to be unprofitable by this consensus report. A negative return to capital invested of 1.3% is achieved by this typical vineyard as shown on page 17. Thus there are no funds available to service any capital borrowings.

2. As this typical large Lower Hunter Valley vineyard is already under a reasonable standard of management, the only way to increase returns is to increase yields. Higher yields are being achieved on the better quality soils in the Lower Hunter.

3. The long term average yield on this typical vineyard must be increased to the average yield for the Hunter Valley as shown on page 18 in order to break even. This is an 8% increase in yield.

For the capital investment to yield a 10% return (before tax), the average yields on our typical vineyard must increase by approximately 65%, i.e. the total vineyard production must rise from 446 tonnes to 734 tonnes.

4. Labour costs account for approximately 60% of the total production costs on our typical vineyard. Thus, any changes in the cost of labour will have a substantial effect on profitability.

5. If mechanical harvesting were to be prevented by such factors as unfavourable soil conditions, total production costs would rise by up to 20%, with a consequent effect on profitability.