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*Grape
District*

Wine Grape Production

46 Hectare ; Un-irrigated
VINEYARD
LOWER HUNTER

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Local Consensus Data Report

- A CONSENSUS OF COSTS & RETURNS

Graham Kaye
District Horticulturist
Maitland
December 1975

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Bulletin M/LCD: 3

MID COAST & HUNTER REGION *

*new south
wales*
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
46 Hectare Unirrigated Vineyard
LOWER HUNTER

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LOCAL CONSENSUS DATA REPORT
A CONSENSUS OF COSTS & RETURNS
December, 1975

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The Hunter Valley is situated in the north-western part of New South Wales, Australia, and is one of the most important wine-growing regions in the world. It is known for its high quality wines, particularly those made from Semillon and Shiraz grapes. The climate is intermediate between the Mediterranean climate of Southern Australia and the continental climate of Northern Australia.

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.

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°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 small vineyard in the Lower Hunter (Pokolbin). The vineyard has its own winery:-

1. VINEYARD AREA

Area planted with vines: 40 ha (100 acres)
 Area taken by roads, waterways,
 headlands and buildings: 6 ha (15 acres)
 Total production area: 46 ha (115 acres)

An additional area of 46 ha (115 acres) is not used for wine grape production and only part of it is suitable for this purpose.

2. GRAPE VARIETIES

Our typical vineyard has planted the following varieties:-

Shiraz	16 ha	(40 ac)
Semillon	12 ha	(30 ac)
Cabernet Sauvignon	7 ha	(18 ac)
Rhine Riesling	3 ha	(7 ac)
Traminer	<u>2 ha</u>	<u>(5 ac)</u>
Total	<u>40 ha</u>	<u>(100 ac)</u>

Planting started in 1968 and most of the vines would have been planted by 1970. Thus the vines are at their full bearing potential.

The Shiraz vines are planted at 3.4 m x 1.8 m (11 ft x 6 ft) spacing 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 1 850 vines per hectare (750 vines per acre). Total number of vines planted is therefore around 75 000.

3. IRRIGATION

In keeping with usual practice for small vineyards in the Lower Hunter, this vineyard is not irrigated.

4. TRELLISING

Our typical Lower Hunter vineyard uses a single wire trellis with the fruiting wire 0.9 m (3 ft) above ground and a foliage wire 300 mm (12 in) above the fruiting wire. The trellis would have cost around \$30 000 or 40 ha @ \$750 per hectare (100 ac @ \$300 per acre).

5. BUILDINGS

Two houses are provided for employees (manager/winemaker and leading hand). An existing timber house was renovated for the leading hand at a cost of about \$10 000. The house for the manager/winemaker is brick and cost around \$15 000, two thirds of which is included in the vineyard cost. The remaining one third is considered as a cost to the winery. Cost of the winery itself, fully equipped, is estimated at \$150 000.

Machinery storage, a fully equipped workshop and staff amenities such as toilets, dining room and showers are provided in one large shed costing around \$6 000. An additional bush shed costing about \$1 000 is provided for machinery storage. Mobile toilets and sheds for use by employees out in the vineyard are also provided. These, together with grape stands for use at harvest, would have cost around \$1 000.

Total cost of buildings for the vineyard is therefore around \$28 000 (excluding one third of the manager/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 from pruning to vintage.

The vineyard permanently employs a manager/winemaker, leading hand and one tractor driver. 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.

The manager/winemaker would spend approximately two thirds of his time in the vineyard. Therefore, two thirds of his salary is allocated to the vineyard costs.

An office assistant would be employed on a casual basis.

7. PLANT AND MACHINERY

Here is a list of plant and machinery to be found on our typical Lower Hunter vineyard of 46 hectares. Prices used are approximate 1975 listings for new machinery.

Item	Description	New Cost (1975) \$
Tractor	45 kW (60 hp)	8 000
Tractor	30-45 kW (40-60 hp)	6 000
Tractor (old)	30-45 kW (40-60 hp)	1 200
Disc Harrows	16 plate	800
Chisel Plough	5 tyne	550
Scarifier	2.1 m (7 ft)	650
Rotary Hoe	152 cm (60 in)	1 750
Slasher	1.8 m (6 ft)	1 200
Cut-off Plough		1 050
Trailer		300
Herbicide Sprayer	900 litre (200 gal) tank	1 600
Mister	450 litre (100 gal) T.P.L.	3 000
Fertilizer Spreader	300 kg (6 cwt)	550
Ripper	Single tyne	150
Scare guns	3 gas powered @ \$300 each	900
Grader Blade		300
Harvesting Bins	6 of 3-tonne @ \$600 each	3 600
Harvesting Trailers	3 @ \$600 each	1 800
Car	($\frac{1}{2}$ charged to vineyard)	2 750
Utility Truck*	3 tonne, second hand ($\frac{1}{2}$ winery, $\frac{1}{2}$ vineyard)	4 500
Sundries	Shovels, Hoes, Pruning Equipment, Pumps, Hoses etc.	2 500
Total		45 150

* 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 INVESTMENT

The total capital invested in this 46 hectare vineyard is \$6 919 per hectare (\$2 800 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.

46 ha @ \$6 919 per hectare* (115 acres @ \$2 800 per acre) This includes land, machinery, buildings, vines, trellising and roads.	\$322 000
46 ha @ \$741 per hectare unplanted* (115 acres @ \$300 per acre)	\$ 34 500
 TOTAL VINEYARD INVESTMENT	<hr/> \$356 500 <hr/>

* *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, vigneronns 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

Under a reasonable standard of management the following viticultural practices would be carried out on our typical small Lower Hunter vineyard.

1. PRUNING

The pruning system used on this vineyard is the Bordelaise Espalier (cane) method, traditionally the most widely used system in the Hunter Valley.

The permanent staff and additional casual labour would prune approximately 225 vines per day each.

The wrapping and tying operation is done by casual labour at an average rate of 600 vines per day each.

2. VINE TRAINING

During the late spring and early summer, the current season's growth is wrapped onto the foliage wire. Subsequently, excessively vigorous growth is controlled by hand topping. This latter operation is carried out twice per season.

3. PEST AND DISEASE CONTROL

Spraying for pest and disease control is done by one 450 litre (100 gal) P.T.O. driven, three-point linkage mounted mister. 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, usually six to eight applications are made each season. In wet seasons, however, as many as 15 sprays may be needed.

The first two sprays are captafol (Difolitan (R)) and the next four sprays are alternately dithianon (Delan (R)) and copper oxychloride/zineb (Copper Curit (R)).

Captafol is applied at the rate of 1.25 kg per hectare (1¼ lb per acre) whilst the rate for dithianon is 1 kg per hectare (1 lb per acre). The copper oxychloride/zineb sprays are used at the rate of 3 kg per hectare (3 lb per acre)

Black Spot

Outbreaks of black spot are rare but control measures are applied annually using Ziram at the rate of 1.5 kg per hectare (1½ lb per acre). This spray is applied along every second row.

Bunch Rots

Crop losses from bunch rots occur in susceptible varieties on average once every three years. In an attempt to control bunch rots, two sprays of captan are applied during flowering each year at 1.25 kg per hectare ($1\frac{1}{4}$ lb per acre).

If seasonal conditions immediately prior to vintage favour the development of bunch rots, then 2 sprays of benomyl at 0.5 kg per hectare ($\frac{1}{2}$ lb per acre) are applied.

Vine Mites

The most significant vine pests are the vine mites. To control them, one lime sulphur spray is applied at bud-burst at the rate of 11.25 litres per hectare (1 gal per acre).

In addition, three wettable sulphur sprays are applied at 2 kg per hectare (2 lb per acre). Wettable sulphur also controls powdery mildew. This spray is combined with one of the downy mildew sprays.

Vine Moth

Considerable damage can be caused by vine moth. Two control sprays of Arsenate of Lead at the rate of 3.0 kg per hectare (3 lb per acre) are applied during the season in conjunction with a downy mildew spray.

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 a year. Cultivation is mainly by discing and scarifying.

Under-vine weed control is achieved by one cutting-off and one throwing-on in 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 at the rate of 1.4 litres of each per sprayed hectare (1 pint per sprayed acre). One spray of amitrole and 2,2-D.P.A. would be applied in areas where persistent perennial weeds occur. These chemicals would be applied at the recommended rates.

5. HARVESTING

An average of fifteen casual labourers are used for hand harvesting, over a three-week period. The permanent labour supervises the harvesting and drives the tractors.

COSTS OF WINE GRAPE PRODUCTION

ANNUAL VINEYARD OVERHEAD COSTS		\$
Council Rates		400
Insurance Premiums		
- Workers Compensation and Accident Payment Insurance	\$1 574	
- Houses and Sheds	\$157	
- Machinery (fire only)	\$329	
- Motor Vehicles (includes 50% of truck and car)	\$435	
- Public Risk	\$250	
- Personal Accident	<u>\$100</u>	2 845
Payroll Tax		923
Motor Vehicle Registrations (includes 50% of car and truck)		249
Office and Stationery Expenses		300
Telephone		200
Bank Charges (not including interest)		100
Accounting Charges		250
Miscellaneous Fees, Licences, Subscriptions, etc.		200
Labour		
- Manager/Winemaker (2/3 of \$10,000)	\$6 667	
- Leading Hand	\$6 200	
- Permanent Tractor Driver	<u>\$6 000</u>	18 867
TOTAL (Carried forward)		<u>\$24 334</u>

ANNUAL VINEYARD OVERHEAD COSTS - Continued

TOTAL (from previous page)

\$24 334

Depreciation - Plant and Machinery

	1975 New Value \$	Expected Life (years)	Trade-in Value \$	Depreciation \$
Tractor 45 kW	8 000	5	3 000	1 000
" 30-45 kW	6 000	5	2 000	800
Car 50%	2 750	4	1 000	438
Utility	4 500	4	750	938
Truck 50%	2 000	6	150	308
Harvesting Trailers	1 800	10	180	162
Harvesting Bins	3 600	10	360	324
Disc Harrows	800	10	80	72
Chisel Plough	550	10	55	50
Scarifier	650	10	65	59
Rotary Hoe	1 750	5	175	315
Slasher	1 200	5	120	216
Cut-off Plough	1 050	8	105	118
Trailer	300	15	30	18
Herbicide Sprayer	1 600	10	160	144
Mister	3 000	8	300	338
Fertilizer Spreader	550	15	55	33
Ripper	150	15	15	9
Scare Guns	900	10	-	90
Grader Blade	300	15	30	18
Sundries - Fire Pumps & Motors)				
- Tools)				
- Hoses)	2 500	15	250	150
- Workshop Equipment)				
				\$5 600
TOTAL VINEYARD OVERHEAD COSTS				\$29 934

ANNUAL VINEYARD RUNNING COSTS

Repairs & Maintenance to Plant and Machinery		\$	
Tractor 45 kW		400	
" 30-45 kW		400	
Tractor (old) 30-45 kW		150	
Car 50%		250	
Utility		600	
Truck 50%		250	
Harvesting Trailers		60	
Harvesting Bins		180	
Disc Harrows		80	
Chisel Plough		30	
Scarifier		80	
Rotary Hoe		150	
Slasher		30	
Cut-off Plough		80	
Trailer		10	
Herbicide Sprayer		40	
Mister		50	
Fertilizer Spreader		30	
Ripper		-	
Scare Guns		30	
Grader Blade		10	
Sundries - Fire Pumps and Motors)			
- Tools)		
- Hoses)		
- Workshop Equipment)	110	3 020
Repairs & Maintenance to Buildings		\$	
House (brick) 2/3 to vineyard		100	
House (wood)		300	
Sheds		100	
Misc. Sheds, Toilets, etc.		50	550
Repairs & Maintenance to Vineyard		\$	
Fences		100	
Trellising		400	
Vines		-	
Roads and Waterways		100	600
TOTAL (Carried forward)			\$4 170

ANNUAL VINEYARD RUNNING COSTS - Continued

TOTAL (from previous page) \$4 170

Fuels and Lubricants	\$	
Diesel	1 050	
Petrol	874	
Oil and Greases	200	\$2 124

Casual Labour	\$	
Pruning and Vine Training	13 000	
Harvesting	5 400	
Office Girl	2 000	\$20 400

Chemicals	\$	
Herbicide		
Paraquat (1.4 l/ha - 2 sprays)		
31 l @ \$6.77/l	210	
Diquat (1.4 l/ha - 2 sprays)		
31 l @ \$6.70/l	208	
Fungicide		
Ziram (1.5 kg/ha - 1 spray)		
61 kg @ \$0.79c/kg	48	
Captafol (1.25 kg/ha - 2 sprays)		
101 kg @ \$4.94/kg	499	
Dithianon (1 kg/ha - 2 sprays)		
81 kg @ \$7/kg	567	
Copper Oxychloride/Zineb (3 kg/ha - 2 sprays)		
243 kg @ \$3.16/kg	768	
Wettable Sulphur (2 kg/ha - 3 sprays)		
243 kg @ \$0.67/kg	163	
Captan (1.25 kg/ha - 2 sprays)		
101 kg @ \$3.33/kg	336	
Insecticide		
Lime Sulphur (11.25 l/ha - 1 spray)		
456 l @ \$0.21/l	96	
Arsenate of Lead (3 kg/ha - 2 sprays)		
243 kg @ \$1.43/kg	347	
Wetting Agent		
45 l @ \$1.26/l	57	3 299

TOTAL VINEYARD RUNNING COSTS		\$29 993
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SUMMARY OF PRODUCTION COSTS*

	Cost per Hectare \$	Cost per Acre \$	Total Cost 46 ha \$
<i>Overhead Costs</i>			
Labour	410	164	18 867
Depreciation	122	49	5 600
Other Overheads	119	47	5 467
Total Overhead Costs	651	260	29 934
<i>Running Costs</i>			
Repairs and Maintenance	91	36	4 170
Fuel and Lubricants	46	19	2 124
Casual Labour	443	177	20 400
Chemicals	72	29	3 299
Total Running Costs	652	261	29 993
TOTAL VINEYARD COSTS	1 303	521	59 927

* Rows and Columns may not total due to rounding.

PROFITABILITY OF WINE GRAPE PRODUCTION

a) Gross Income

The group felt that the average yield for all varieties from this typical unirrigated Lower Hunter vineyard would be 3.7 tonnes per hectare (1.5 tonne/acre). There was also agreement that the price realised for all varieties would be \$300 per tonne.

Using these figures, gross income from our typical vineyard would therefore be:-

40 ha of wine grapes @ 3.7 tonne/ha @ \$300/tonne	\$44 400
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b) Profitability

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

TOTAL GROSS INCOME (vignerons' estimates)	\$44 400
less TOTAL OVERHEAD COSTS	\$24 334
less TOTAL RUNNING COSTS	<u>\$29 993</u>
= NET VINEYARD INCOME FROM WINE GRAPES	-\$9 927
less DEPRECIATION	<u>\$5 600</u>
= NET RETURN TO CAPITAL before tax	<u><u>-\$15 527</u></u>

Return on capital invested: $\frac{-15\ 527 \times 100}{356\ 500} = -4.4\%$

By way of comparison, the average yields per hectare for the Hunter Valley over the 1974 and 1975 vintages would give a gross income to our typical vineyard of:

16 ha Shiraz @ 4.8 tonne/ha @ \$300/tonne	\$23 040
12 ha Semillon @ 5.2 tonne/ha @ \$300/tonne	18 720
7 ha Cabernet Sauvignon @ 3.7 tonne/ha @ \$300/tonne	7 770
3 ha Rhine Riesling @ 4.3 tonne/ha @ \$300/tonne	3 870
2 ha Traminer @ 4.3 tonne/ha @ \$300/tonne	<u>2 580</u>
	<u><u>\$55 980</u></u>

The profitability would therefore be:-

	TOTAL GROSS INCOME (1974/1975 Hunter Valley average)	\$55 980
less	TOTAL OVERHEAD COSTS	\$24 334
less	TOTAL RUNNING COSTS	<u>\$29 993</u>
=	NET VINEYARD INCOME FROM WINE GRAPES	\$1 653
less	DEPRECIATION	<u>\$5 600</u>
=	NET RETURN TO CAPITAL before tax	<u>-\$3 947</u>

Return on capital invested: $\frac{-3\ 947 \times 100}{356\ 500} = -1.1\%$

CONCLUSIONS

1. This consensus report shows that, on our typical small Lower Hunter Valley vineyard, the production of wine grapes is unprofitable. The typical vineyard presented on page 16 shows a 4.4% negative return to capital invested, thus there are no funds available to service borrowed capital.

2. As this typical small 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. In order for this typical vineyard to break even (f.e. cover all cash costs and depreciation), the long term average yield must be increased to at least 5 tonnes per hectare (2 tonnes per acre). This is an increase in yield of 36%.

For the capital investment to yield a 10% return (before tax), average yields on our typical vineyard must increase by 217% i.e. a long term average yield of at least 8 tonnes/hectare ($3\frac{1}{4}$ tonnes per acre).

4. Approximately two thirds of the total production costs are for labour. Thus, any change in the cost of labour will have a substantial effect on profitability.

5. This typical vineyard is too small to economically own and operate a mechanical harvester unless contract harvesting could also be done for other vineyards. To pay a contractor to mechanically harvest the crop would not be significantly less expensive than hand-harvesting.