Cost of production benchmarks for canning peaches and pears

Peter Gray
RMCG

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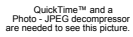

Canned Fruit Industry Council of Australia

FR01058:Cost of Production benchmarks for canning peaches and pears

2000/01 to 2003/04

Prepared by:
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FR01058 (January 2005)

Horticulture Australia Limited, Project FR01058

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FR01058 was instigated when SPC Ardmona Limited and its grower-suppliers agreed it was timely to establish objective economic benchmarks for the production of canning peaches and pears in the orchard to better plan for the long-term future.

Commencing with a study of two years' data (2000/01 and 2001/02) for the canning peach and pear enterprises of individual businesses, the project was extended to include data for the 2002/03 and 2003/04 seasons. This report presents the benchmarks established for the four years to 2003/04.

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1 Media Summary

Prompted by long-term considerations of global competition for this industry, SPC Limited and Ardmona Foods Limited merged to establish a single $450 million canning business that will be well placed to supply domestic and export markets.

As a consequence of this changing dynamic, the cannery and its grower-suppliers agreed it was timely to establish objective benchmarks for the costs of producing canning peaches and pears in the orchard. There had been no recent study of these costs, and the industry felt that the establishment of relevant benchmarks would enable it to better plan for its long-term future.

Commencing with a study of two years' data (2000/01 and 2001/02) for the canning peach and pear enterprises of individual businesses, the project was extended to include data for the 2002/03 and 2003/04 seasons. This report presents the benchmarks established for the four years to 2003/04.

The major findings of the study are:

Trellis Peaches

- In 2000/01 a modest average return on capital of 3% was earned. However, losses were recorded in each of the three years since then, resulting in zero returns on capital.
- The decline in profitability was caused by modest increases in income being insufficient to counter increases in expenses.
- Average yields remained stable over the four years, and trellis peaches did not suffer the substantial drought and frost-affected yields experienced in freestanding blocks. There is, therefore, a reasonable expectation that a favourable season will produce higher yields; during the last two challenging seasons some growers achieved yields of about 40t/ha and all trellis blocks yielded more than the freestanding blocks.
- Since 2000/01, study growers have not earned a return high enough to cover basic business costs;
- Given a higher capital cost, it is imperative that growers achieve higher yields and returns than those achieved by the study group to ensure an acceptable return on their investment.

Freestanding Peaches

- Profitability declined each year of the study period, with average return on capital declining from 16% to minus 10%.
- The decline in business performance was driven almost entirely by a reduction in average yield each season.
- A 12% reduction in average yield during 2001/02 was followed by further, large reductions due to drought and frost conditions.
- If all other economic factors were to remain at the 2003/04 rates, a yield recovery to 32t/ha during 2004/05 would result in an average return on capital of about 14%.
- The underlying outlook for freestanding peaches is more optimistic than the study figures suggest.

Pears

- Profitability increased during each year of the study period, with return on capital improving from 2% to 15%.

- The improvement in business performance was driven almost entirely by an increase in net return each season.

- Between 2000/01 and 2003/04 the cannery base price rose by 11.8%. During the same period net return to the study growers improved by 25%. Given the stable yields, it would appear that the increase in net return has been driven by an equal combination of price increases and improved quality.

- Given the study group yields and quality, the outlook for canning pears has improved significantly.

- In the longer-run, however, research should continue to determine an earlier-production system to replace the present, ageing trees.

Labour Cost

- Labour stands out as the greatest single business cost. Some observations flow from this fact:

  Industry R&D programs address many other factors of orchard activity, but rarely address ways of reducing this largest single business cost;

  Australian labour costs are generally assumed to be greater than those of our competitors. As international trade becomes more robust ways must be found to reduce Australian labour costs;

  Despite the substantial increase in development cost due to trellised plantings, the study group participants did not demonstrate any significant complementary saving in labour cost.

Study Recommendations

The following recommendations stem from the longer-term study process:

- A relatively small percentage of growers maintain orchard information in such a form as would enable them to compare their figures against the data from this study. We recommend that the industry should determine and implement a method whereby more growers can easily identify their own production costs and business profit by fruit type.

- Given that many growers will be unable to easily compare their own data against the Cost of Production data, it would be of benefit if some simple ballpark benchmarks could be developed to assist growers to check their business efficiency without major recording. We recommend that some simple performance benchmarks should be developed to assist growers understand their business performance.

- Given the continuing competitive pressures from South American, South African and Chinese producers, it will become imperative that Australian labour costs are reduced. We recommend that the industry should devote R&D investment to identify ways in which labour costs can be reduced over time.

- This four-year study has provided a valuable, objective insight into the performance of canning fruitgrowers and begins to provide information that can be used by SPC Ardmona and growers to recognise the impacts of seasonal conditions, price and quality variations and increasing production costs on grower profitability in the context of cannery constraints on raw material cost. It also appears that there is sufficient dynamic change from season to season to warrant annual studies for the foreseeable future. We recommend that the industry should continue to conduct future surveys whilst valuable information is being gained from the resulting data.

2 Introduction

2.1 BACKGROUND

Prompted by long-term considerations of global competition for this industry, SPC Limited and Ardmona Foods Limited merged to establish a single $450 million canning business that will be well-placed to supply domestic and export markets.

As a consequence of this changing dynamic, the cannery and its grower-suppliers agreed it was timely to establish objective benchmarks for the costs of producing canning peaches and pears in the orchard. There had been no recent study of these costs, and the industry felt that the establishment of relevant benchmarks would enable it to better plan for its long-term future.

Commencing with a study of two years' data (2000/01 and 2001/02) for the canning peach and pear enterprises of individual businesses, the project was extended to include data for the 2002/03 and 2003/04 seasons. This report presents the benchmarks established for the four years to 2003/04.

Implementation of the project (FR01058 "Cost of production benchmarks for canning peaches and pears") was undertaken by RMCG, agricultural and management consultants, Bendigo. Their brief was to complete the extended study on the same basis used in the first two-year study, so the data would represent an objective trend position over the four years researched.

2.2 OBJECTIVES OF COST OF PRODUCTION

The purpose of the study was to measure data for the canning peach and pear enterprises of each business, and estimate appropriate benchmarks that could be used to understand and develop industry strategies. The aim of the Cost of Production study was to show:

- Income – derived from yield and average price
- Costs, both operating and capital
- Profit
- Return on Capital

Growers can use the resulting benchmarks to identify the strengths and weaknesses of their enterprises and, therefore, target management changes to build on strengths and eliminate weaknesses.

2.3 THE STUDY GROUP

2.3.1 The Original Group

The original steering committee grower and processor members agreed the names of the ten study growers who were chosen for their recognised skills and experience in growing canning fruit. Of the ten orchards surveyed:

- All grew canning pears, and represented 5% of 2001 census canning pear plantings by area;
- Nine grew canning peaches;
- Seven grew canning peaches on freestanding trees, and represented 7% of census freestanding peach plantings by area;

- Six grew peaches on central leader or Tatura Trellis systems, and represented 11% of census trellised canning peach plantings by area.

The process was confidential, so that an individual's financial data were not identified.

The financial data in such a relatively small sample were very diverse, and the study results were influenced by each of those businesses. Therefore, although the study results are representative of the growing activities of some of the best canning growers in the region and observations may be drawn on that basis, conclusions are fundamentally applicable to those businesses only.

2.3.2 The Changed Group

Unfortunately, during the course of the second study, one orchard informed us it could no longer participate in the process due to a significant change in its production base. Accordingly, the original two-year published results were re-calculated to omit the data from this orchard, which grew all three types of canning fruit. The following table summarises the key differences between the published and amended data:

2000/01 (Published)	**Trellis Peaches**	**F/S Peaches**	**Pears**
Yield (t/ha)	34	33	54
Average Return ($/t)	454	447	251
EBIT ($/ha)	2,819	3,106	582
Return on Capital (%)	8%	15%	3%
2000/01 (Amended)			
Yield (t/ha)	29	32	54
Average Return ($/t)	450	450	249
EBIT ($/ha)	1,263	3,270	457
Return on Capital (%)	3%	16%	2%
2000/01 (Published)			
Yield (t/ha)	38	30	54
Average Return ($/t)	442	432	260
EBIT ($/ha)	1,350	923	553
Return on Capital (%)	4%	4%	3%
2000/01 (Amended)			
Yield (t/ha)	31	28	55
Average Return ($/t)	434	429	257
EBIT ($/ha)	(730)	879	826
Return on Capital (%)	-2%	4%	4%

The non-participating orchard achieved some exceptional indicators for its trellis peaches in 2000/01 and 2001/02. Due to the small sample size its inclusion then, and its exclusion now, has a significant influence on the results for trellis peaches. The effects on the freestanding peach and pear data are less severe.

The overall effect is that the final four-year data for trellis peaches may show a more gradual trend than might otherwise have been the case if this orchard had been included in the second two-year study.

3 Cost Of Production

3.1 DESCRIPTION

Different practitioners have calculated 'Cost of Production' in a variety of ways and there are advantages and disadvantages associated with the various methodologies. In addition, costs are expressed in different ways, for example; per tonne, per hectare.

The reason different methodologies are used is that study readers often ask different questions. In this study five different methodologies are used and five different ways of expressing costs.

3.2 METHODOLOGIES

3.2.1 Theoretical Cost of Production

A complete Cost of Production takes into account two very important factors that recognise the long-term aspects of growing fruit:

- The yields over the life of a permanent planting change. Low yields in early years are offset by higher yields in the longer term. Therefore, looking at one year's yield can neglect to take these factors into account;
- Depreciation should include the period of redevelopment.

The inclusion of these factors answers questions about Cost of Production over the life of the enterprise and any individual year should not be taken in isolation. Steering committee views behind this study were divided between the short-term and long-term views; however, this aspect has relevance for long-term planning. The theoretical Cost of Production is contained in Appendix 1.

3.2.2 Annual Cost of Production (P&L interest cost)

The annual Cost of Production results shown in Chapter 4.0 include the quantum of finance costs that would normally be stated in a grower's Profit & Loss Account. When establishing the project the steering committee preferred this methodology as a benchmarking tool because growers would be able to compare the study outcomes with data from their own Profit & Loss statements.

Note: This method of estimating Cost of Production is not endorsed by RMCG as a reflection of the complete range of economic costs associated with an orchard over its production cycle.

3.2.3 Annual Cost of Production (full economic cost)

A complete Cost of Production must recognise interest costs associated with lost income during redevelopment, and interest on equipment and the developed land value. For an annual Cost of Production this is the standard methodology used by RMCG and is contained in Appendix 2.

3.2.4 Break-even Cost of Production

Cost of Production includes an allowance for theoretical salaries for owners and also the cost of capital (interest foregone because of owning capital and depreciation of plantings). For planning, growers are mostly concerned with knowing what costs they have to cover to break even. That is, at what point do they start to make a profit which can be used as return on capital. Therefore, to help growers answer that question, which is very important to them for business survival, we have also provided this picture as part of the study.

3.2.5 Activity Cost of production

This method considers the major cost centres for a business and determines the proportion that each contributes to total cost. Key cost activities become easier to identify.

3.3 EXPRESSION OF COSTS

In the addition to the above methods we have also expressed the results in the following different ways:

- Per hectare; from a grower perspective this expression enables him to compare the results from different fruit types to determine which are the most efficient, although per owner labour unit is also important.
- Per tonne; from an industry perspective, and in terms of negotiating prices, this expression is of interest.
- Per Equivalent tonne; this expression considers unit income and costs over the full life-cycle of the enterprise.
- Return on Capital; from a grower perspective this expression measures performance in a manner that enables him to determine if he is making a long-term profit, and to compare fruit types. It is also a simple way of understanding whether or not the industry is profitable.
- % of activity; this expression assists the industry to understand the main elements of production cost.

3.4 STUDY APPROACH

General

The study sought to identify the income, and operating and capital costs, relating to:

- Trellis-grown canning peaches
- Canning peaches grown on freestanding trees
- Williams pears.

The surveys collected data about:

- The physical infrastructure, including planting systems
- The yields obtained and income produced
- The operating costs incurred in growing each type of fruit
- The capital cost of equipment and block development

Capital Costs

It is important to cost capital when calculating enterprise profit. Capital structure varies between businesses; some are debt-free and others borrow heavily. Whatever the business structure, capital has cost as:

- Loan interest, or
- Interest income lost, that is, the enterprise could be sold and capital invested elsewhere.

In an orchard, capital is required to fund:

- Depreciation
- Interest (for capital that is borrowed)
- Return on capital (for capital that is owned and invested in the business)

Depreciation

Farm equipment, orchard (tree plantings) and irrigation systems wear out (depreciate). Replacement needs to be funded. Annual depreciation of orchard equipment was calculated at 15% of the written-down value of that equipment. For the second two years of this study an allowance was made for additions to plant and equipment assets in each orchard.

Annual depreciation of the orchard (development capital cost, including irrigation but excluding land) was based on the expected life of the trees. The depreciation rates applied were: trellis peaches 5.9% (17 years), freestanding peaches 5.3% (19 years), and pears 1.25% (80 years).

Interest/Return on Capital

For the results based on actual yield, an amount was taken up for finance costs equating to the total of bank charges, borrowing costs, bank interest, and hire purchase and leasing costs incurred by an orchard. Based on a separate, randomised, industry study by RMCG, the figure of 7% of gross income was applied.

Owner's Labour

A standard salary rate was applied to the time owners spent on canning fruit. The annual equivalent rate agreed for the initial study by the steering committee was $75,000 for each full-time owner worker. This rate was retained for 2002/03 and 2003/04.

Reporting

Averages can be calculated by treating all growers as one farm; this method skews results to the larger producers. An alternative is to treat each grower equally, irrespective of production. Due to the small sample size and large differences in scale, the latter approach was taken.

Results are described by area ($/ha) and by production ($/t). The $/ha results are influenced by individual orchard area and costs. The $/t results are influenced by individual yield and costs.

3.5 COMMENTS ON SEASONAL CONDITIONS

The 2002/03 and 2003/04 seasons were characterised by the most extreme conditions ever experienced by many growers:

- Preceded by years of low rainfall, 2002/03 produced a severe drought that increased orchard costs through water purchases at high prices and additional processes such as thinning. Fruit quality also suffered, with a consequent effect on value received for some types and varieties;

- During 2003/04 the Goulburn Murray Valleys experienced the most severe frost in over 25 years, which resulted in the significant loss of stone fruit on many orchards although the effect was not uniform across the region.

The regional industry applied for Exceptional Circumstances relief on the basis of these events.

4 Four-year Survey Results

Group Summary - Trellis Peach Cost of Production ($/ha)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	29	31	32	30
Net Return	($/t)	450	434	455	448
Income		13,157	13,295	14,456	13,634
Operating Costs					
Chemicals and fertiliser		1,235	1,160	1,178	1,094
Fuel and oil		287	294	346	324
Repairs and maintenance		520	555	454	509
Labour - general		1,406	1,151	1,146	1,096
Labour - pruning and training		1,521	2,241	2,262	2,422
Labour - thinning		305	1,070	640	553
Labour - picking		1,888	2,545	2,541	2,569
Total Labour Cost		*5,120*	*7,007*	*6,588*	*6,641*
Other operating costs		1,121	1,399	2,392	1,585
Total operating costs		8,282	10,414	10,957	10,153
as a % of income		63%	78%	76%	74%
Operating Surplus		4,874	2,881	3,499	3,481
Depreciation					
Plant & equipment (15%)		246	246	219	246
Orchard development (5.9%, 5.3%, 1.3%)		1,525	1,525	1,525	1,525
Owners Labour		1,840	1,840	1,840	1,840
Earnings Before Interest and Tax		1,263	(730)	(85)	(130)
Return on Capital		3%	-2%	0%	0%
Less Finance Costs					
7-8% of income		1,053	936	1,150	1,076
Earnings After Finance Costs		210	(1,666)	(1,235)	(1,206)
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		12,945	14,961	15,691	14,840

Group Summary - Trellis Peach Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	29	31	32	30
Net Return	($/t)	450	434	455	448
Income		450	434	455	448
Operating Costs					
Chemicals and fertiliser		42	38	37	36
Fuel and oil		10	10	11	11
Repairs and maintenance		18	18	14	17
Labour - general		48	37	36	36
Labour - pruning and training		52	72	71	80
Labour - thinning		10	35	20	18
Labour - picking		65	82	79	85
Total Labour Cost		*175*	*226*	*206*	*218*
Other operating costs		38	45	75	52
Total operating costs		284	340	345	334
as a % of income		63%	78%	76%	74%
Operating Surplus		166	94	110	114
Depreciation					
Plant & equipment (15%)		8	8	7	8
Orchard development (5.9%, 5.3%, 1.3%)		52	50	48	50
Owners Labour		63	60	58	61
Earnings Before Interest and Tax		43	(24)	(3)	(5)
Return on Capital		3%	-2%	0%	0%
Less Finance Costs					
7-8% of income		36	31	36	35
Earnings After Finance Costs		6	(55)	(39)	(40)
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		443	489	493	488

Group Summary - F/S Peach Cost of Production ($/ha)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	32	28	23	19
Net Return	($/t)	450	429	454	448
Income		14,493	12,185	10,612	8,654
Operating Costs					
Chemicals and fertiliser		1,280	1,412	1,088	980
Fuel and oil		417	365	374	278
Repairs and maintenance		420	477	439	570
Labour - general		897	1,070	989	935
Labour - pruning and training		1,505	1,401	1,569	1,492
Labour - thinning		583	550	720	313
Labour - picking		1,726	1,531	1,635	1,202
Total Labour Cost		*4,711*	*4,552*	*4,913*	*3,942*
Other operating costs		1,051	1,156	2,039	1,532
Total operating costs		7,879	7,962	8,853	7,303
as a % of income		54%	65%	83%	84%
Operating Surplus		6,614	4,223	1,759	1,351
Depreciation					
Plant & equipment (15%)		224	224	261	245
Orchard development (5.9%, 5.3%, 1.3%)		479	479	479	479
Owners Labour		2,641	2,641	2,641	2,641
Earnings Before Interest and Tax		3,270	879	(1,622)	(2,014)
Return on Capital		16%	4%	-8%	-10%
Less Finance Costs					
7-8% of income		1,160	863	849	690
Earnings After Finance Costs		2,110	16	(2,471)	(2,704)
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		12,383	12,169	13,083	11,358

Group Summary - F/S Peach Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	32	28	23	19
Net Return	($/t)	450	429	454	448
Income		450	429	454	448
Operating Costs					
Chemicals and fertiliser		40	50	46	51
Fuel and oil		13	13	16	14
Repairs and maintenance		13	17	19	30
Labour - general		28	38	42	48
Labour - pruning and training		47	49	67	77
Labour - thinning		18	19	31	16
Labour - picking		54	54	70	62
Total Labour Cost		*146*	*160*	*210*	*204*
Other operating costs		33	41	87	79
Total operating costs		245	280	378	378
as a % of income		54%	65%	83%	84%
Operating Surplus		205	149	76	70
Depreciation					
Plant & equipment (15%)		7	8	11	13
Orchard development (5.9%, 5.3%, 1.3%)		15	17	20	25
Owners Labour		82	93	113	137
Earnings Before Interest and Tax		101	31	(69)	(105)
Return on Capital		16%	4%	-8%	-10%
Less Finance Costs					
7-8% of income		36	30	36	36
Earnings After Finance Costs		65	1	(105)	(140)
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		385	428	559	588

Group Summary - Pear Cost of Production ($/ha)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	54	55	54	54
Net Return	($/t)	249	257	290	312
Income		13,344	14,144	15,871	16,771
Operating Costs					
Chemicals and fertiliser		1,290	1,073	1,057	1,118
Fuel and oil		489	421	518	454
Repairs and maintenance		681	723	831	930
Labour - general		1,474	1,430	1,396	1,370
Labour - pruning and training		1,398	1,567	1,570	1,436
Labour - thinning		-	2	-	-
Labour - picking		3,356	3,733	3,498	3,778
Total Labour Cost		*6,228*	*6,732*	*6,463*	*6,585*
Other operating costs		1,480	1,650	2,638	2,015
Total operating costs		10,168	10,599	11,507	11,101
as a % of income		76%	75%	73%	66%
Operating Surplus		3,176	3,545	4,364	5,671
Depreciation					
Plant & equipment (15%)		225	225	258	269
Orchard development (5.9%, 5.3%, 1.3%)		97	97	97	97
Owners Labour		2,397	2,397	2,397	2,397
Earnings Before Interest and Tax		457	826	1,612	2,908
Return on Capital		2%	4%	8%	15%
Less Finance Costs					
7-8% of income		1,053	987	1,262	1,340
Earnings After Finance Costs		(596)	(161)	350	1,568
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		13,940	14,305	15,521	15,204

Group Summary - Pear Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	54	55	55	54
Net Return	($/t)	249	257	290	312
Income		249	257	290	312
Operating Costs					
Chemicals and fertiliser		24	20	19	21
Fuel and oil		9	8	10	8
Repairs and maintenance		13	13	15	17
Labour - general		28	26	26	25
Labour - pruning and training		26	29	29	27
Labour - thinning		-	0	-	-
Labour - picking		63	68	64	70
Total Labour Cost		*116*	*123*	*119*	*122*
Other operating costs		28	30	48	37
Total operating costs		190	193	211	206
as a % of income		76%	75%	73%	66%
Operating Surplus		59	64	79	106
Depreciation					
Plant & equipment (15%)		4	4	5	5
Orchard development (5.9%, 5.3%, 1.3%)		2	2	2	2
Owners Labour		45	44	44	45
Earnings Before Interest and Tax		9	14	28	54
Return on Capital		2%	4%	8%	15%
Less Finance Costs					
7-8% of income		20	18	23	25
Earnings After Finance Costs		(11)	(4)	5	29
Total Cost of Production (including owners labour, orchard depreciation and finance costs)		260	261	285	283

5 Findings – Annual Cost of Production

5.1 TRELLIS PEACHES

Key Finding:

- **In 2000/01 a modest average return on capital of 3% was earned. However, losses were recorded in each of the three years since then, resulting in zero returns on capital.**

Factors:

- **The decline in profitability was caused by modest increases in income being insufficient to counter increases in expenses.**
- Yield varied little during the four-year period.
- Net returns were volatile with no real increase in return over the period. Although actual cannery price increases were modest, variable quality seems to have depressed returns.
- Since 2000/01 average costs for trellis peaches have increased noticeably. Since that first year, labour costs associated with pruning, thinning and picking have increased whilst general labour cost has reduced a little.

Looking Ahead:

- Average yields remained stable over the four years, and trellis peaches did not suffer the substantial drought and frost-affected yields experienced in freestanding blocks. There is, therefore, a reasonable expectation that a favourable season will produce higher yields; during the last two challenging seasons some growers achieved yields of about 40t/ha and all trellis blocks yielded more than the freestanding blocks.
- Average net return did not improve over the study period. However, drought and frost conditions may well have reduced fruit quality and net return might be higher in more favourable seasons.
- **Given a higher capital cost, it is imperative that growers achieve higher yields and returns than those achieved by the study group to ensure an acceptable return on their investment.**

5.2 FREESTANDING PEACHES

Key Finding:

- **Profitability declined each year of the study period, with average return on capital declining from 16% to minus 10%.**

Factors:

- **The decline in business performance was driven almost entirely by a reduction in average yield each season.**
- A 12% reduction in average yield during 2001/02 was followed by further, large reductions due to drought and frost conditions.
- As with trellis peaches, seasonal quality tended to depress net returns despite modest cannery price increases.

Looking Ahead:

- If all other economic factors were to remain at the 2003/04 rates, a yield recovery to 32t/ha during 2004/05 would result in an average return on capital of about 14%.

- **The underlying outlook for freestanding peaches is more optimistic than the study figures suggest.**

5.3 PEARS

Key Finding

- **Profitability increased during each year of the study period, with return on capital improving from 2% to 15%.**

Factors

- **The improvement in business performance was driven almost entirely by an increase in net return each season.**

- Annual yield was remarkably stable across the four-year period.

- Between 2000/01 and 2003/04 the cannery base price rose by 11.8%. During the same period net return to the study growers improved by 25%. Given the stable yields, it would appear that the increase in net return has been driven by an equal combination of price increases and improved quality.

- Other operating costs increased during Year 3 because of the drought, but also in Year 4. However, the steady improvement in income more than compensated for those increases.

Looking Ahead

- **Given the study group yields and quality, the outlook for canning pears has improved significantly.**

- In the longer-run, however, research should continue to determine an earlier-production system to replace the present, ageing trees.

6 Findings – Break-even Analysis

6.1 INTRODUCTION

A complementary approach to cost of production study is that of break-even analysis. The Break-even Price is that price at which all essential costs have been covered, such as:

- All operating costs, including direct costs and overheads;
- Finance costs, such as bank charges, interest, finance interest and charges;
- Depreciation on equipment and planting development;
- Family drawings; this is typically about $35,000 for a farming family.

It must be noted that these represent the basic business costs. Break-even analysis excludes the real value of owners' labour and the interest costs associated with equipment, plantings and land. It does not represent the long-term business cost structure.

6.2 TRELLIS PEACHES

The income, break-even price and profit or loss compared to break-even per tonne are shown for each year:

(Figures in $/t)	**2000/01**	**2001/02**	**2002/03**	**2003/04**
Yield (t/ha)	29	31	32	30
Net return	450	434	455	448
Operating Costs	284	340	345	334
Depreciation Costs	61	58	55	58
Interest & Lease Costs	36	31	36	35
Family Drawings	29	28	27	28
Break-even return	410	457	463	456
Profit/(Loss) compared to break-even	40	(23)	(8)	(8)

Points to note include the following:

- Since 2000/01, study growers have not earned a return high enough to cover basic business costs;
- During the highest-yielding, highest-return year (2002/03) drought-related costs forced a break-even performance;
- Given ongoing costs of about $455/t, study growers would still only break-even from the best return they have achieved in four years;
- As previously noted (3.2) it is imperative that trellis peach growers attain yields closer to 40t/ha to reduce unit costs and earn acceptable profits.

6.3 FREESTANDING PEACHES

The income, break-even price and profit or loss compared to break-even per tonne are shown for each year:

(Figures in $/t)	2000/01	2001/02	2002/03	2003/04
Yield (t/ha)	32	28	23	19
Net Income	450	429	454	448
Operating Costs	245	280	378	378
Depreciation Costs	22	25	32	38
Interest & Lease Costs	36	30	36	36
Family Drawings	38	43	53	64
Break-even price	341	379	499	516
Profit/(Loss) compared to break-even	109	50	(45)	(68)

Points to note include the following:

- The significant reduction in yield, due to drought and frost, increased unit costs substantially;
- Despite this, these study indicators suggest that a 'normal' yield of about 30t/ha and an achievable net return of about $450/t should result in profits from freestanding peaches.

6.4 PEARS

The income, break-even price and profit or loss compared to break-even per tonne are shown for each year:

(Figures in $/t)	2000/01	2001/02	2002/03	2003/04
Yield (t/ha)	54	55	55	54
Net Income	249	257	290	312
Operating Costs	190	193	211	206
Depreciation Costs	6	6	7	7
Interest & Lease Costs	20	18	23	25
Family Drawings	21	20	21	21
Break-even price	236	237	261	259
Profit/(Loss) compared to break-even	13	20	29	53

Points to note include the following:

- Net income/t has risen more rapidly than unit costs;
- The combination of stable yield and increased return enabled study growers to earn improved profits from canning pears.

7 Findings - Activity Analysis

7.1.1 Introduction

Another complementary way to view a business is by considering the major cost centres and their contribution to total cost. This is activity-based cost of production.

7.1.2 Study Findings

The following table presents four years' averaged costs on a functional basis for each fruit type. Please note that it is based on the costs from Section 4, although a minimum drawings value of $35,000 is used rather than the $75,000 from the study. The standard RMCG methodology would also include imputed interest costs.

		Trellis Peaches	F/S Peaches	Pears
Crop care	Chemicals, fertiliser	9%	11%	8%
Equipment Costs	Depn, R&M, Fuel	8%	10%	11%
Employed Labour	Contractors, staff, casuals	46%	42%	48%
Own Labour	Minimum drawings	6%	11%	8%
Other Operating Costs	Other variable costs, overheads	12%	13%	14%
Development Cost	Trees, trellis, irrigation, installation	11%	4%	1%
Finance	Bank charges, interest, lease, HP	8%	8%	9%
Totals		100%	100%	100%
Total Costs ($/ha)		13,628	10,840	13,464

It should be noted that F/S peach labour costs are depressed because poor yields during two years resulted in relatively low picking costs. Points of note include the following:

- Crop care is critical for optimising income, but still only accounts for about 10% of total costs;
- The fruit industry has traditionally been frugal with its equipment costs compared to some other agricultural sectors;
- Labour stands out as the greatest single business cost. Some observations flow from this fact:

  Industry R&D programs address many other factors of orchard activity, but rarely address ways of reducing this largest single business cost;

  Australian labour costs are generally assumed to be greater than those of our competitors. As international trade becomes more robust ways must be found to reduce Australian labour costs;

  Despite the substantial increase in development cost due to trellised plantings, the study group participants did not demonstrate any significant complementary saving in labour cost.

8 Study Comparisons

In 1995, the Pear Industry Steering Group commissioned a report into the competitiveness of the Australian industry compared to South Africa and the Pacific northwest region of the United States. The result of that commission was the preparation and publication of the *"Pear Industry Benchmarking Study" (David Pullar & Associates, 1995)*.

The following table compares some indicators from this current study with those from the 1995 benchmarking study. It should be noted that:

- The surveyed orchards will not be the same;
- We are unable to confirm if the costs included in each study are similar;
- The 1995 study did not differentiate between harvest costs for Williams and Packham pears. Given that best practice Williams yield was 78t/ha compared to best practice Packham yield of 40t/ha, we cannot confirm whether the operating costs stated below are directly comparable to canning pear costs.

For comparison we have used the best figures from this current study. In addition we estimated the potential result for 2003/04 if yields had been equivalent to those achieved in 1995.

(Figures in $/ha)	**1994 Season Best Practice**	**1994 Season Average**	**2003/04 Study**	**2003/04 Adjusted**
Yields (t/ha)	78	64	54	78
Income	14,249	10,985	16,771	19,968
Operating Costs	7,404	7,999	11,740	13,419
as a % of income	52%	73%	70%	67%
Operating Surplus	6,845	2,986	5,031	6,549
Depn and finance costs	727	1,546	1,706	1,963
Net Profit	6,118	1,440	3,325	4,586

The following very general points may be made:

- The study group attained yields of about 55t/ha during the past four seasons, including a number of growers who achieved 60-70t/ha. Seasonal conditions notwithstanding are WBC yields declining and what implications does this have for the industry?
- Allowing for higher picking costs in the 1994 figures, the quantum increases in income and expenses between the two periods may be similar.

9 Study Recommendations

The following recommendations stem from the longer-term study process:

Orchard Data

An objective for the Cost of Production study was that of enabling growers to benchmark their own performance against the indicators calculated from the performance of good regional orchards.

Following the first two-year study public presentation of the data was made to grower meetings in Cobram and Shepparton. From discussions which took place at those meetings, and from our own knowledge of the industry, it was apparent that a relatively small percentage of growers maintain orchard information in such a form as would enable them to compare their figures against the data from this study.

To make best use of this and any future studies, industry should identify the data that needs to be collected to determine Cost of Production. This would assist growers develop their management information systems to compare with industry benchmark indicators.

We recommend that the industry should determine and implement a method whereby more growers can easily identify their own production costs and business profit by fruit type.

Industry Benchmarks

Given that many growers will be unable to easily compare their own data against the Cost of Production data, it would be of benefit if some simple ballpark benchmarks could be developed to assist growers to check their business efficiency without major recording.

We recommend that some simple performance benchmarks should be developed to assist growers understand their business performance.

Labour Cost

As identified in the current canning industry strategic plan labour cost represents a relatively high proportion of total costs yet, traditionally, little R&D investment has been committed to find ways of changing this although individual growers have conducted their own experiments.

Given the continuing competitive pressures from South American, South African and Chinese producers, it will become imperative that Australian labour costs are reduced.

We recommend that the industry should devote R&D investment to identify ways in which labour costs can be reduced over time.

Future Industry Surveys

This four-year study has provided a valuable, objective insight into the performance of canning fruitgrowers and begins to provide information that can be used by SPC Ardmona and growers to recognise the impacts of seasonal conditions, price and quality variations and increasing production costs on grower profitability in the context of cannery constraints on raw material costs.

As we have noted, the long-term trend information can be disrupted each time a grower leaves the study. However, this is not a factor that should preclude the industry from continuing further survey work. It also appears that there is sufficient dynamic change from season to season to warrant annual studies for the foreseeable future.

We recommend that the industry should continue to conduct future surveys whilst valuable information is being gained from the resulting data.

10 Appendix 1: Equivalent Yield and Income

10.1 INTRODUCTION

One of the difficulties in comparing different properties is that they are each at different stages of development. There is a significant lag between the time a tree is planted, and when it reaches fully mature production.

To overcome this, an equivalent yield was calculated for each fruit type. The equivalent income is simply the income generated by this equivalent yield, rather than the actual yield. Equivalent yields take into account the years of non-bearing, or less than mature-bearing, production of trees at the beginning and end of their lives. The equivalent yield is calculated assuming that:

- Trellis canning peaches are on a continuous 17-year redevelopment cycle, reaching full production in five years.
- Freestanding canning peaches are on a continuous 19-year redevelopment cycle, reaching full production in seven years.
- Canning pears are on a continuous 80-year redevelopment cycle, identified by growers as being a reasonable productive life for Williams' trees, reaching full production in 20 years.
- Costs also vary with yield (especially picking costs). To account for this, costs are also adjusted in the equivalent yield calculation.

In practice this means properties that have mostly young plantings will have a higher equivalent yield and higher equivalent income than actual. This corrects for the fact that they currently have lower production than their long-term average.

Similarly, properties that are all fully bearing will tend to have a lower equivalent yield and lower equivalent income than actual. This corrects for the fact that they currently have higher production than their long-term average.

Group Summary - Trellis Peach Cost of Production ($/ha)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	42	49	39	28
Net Return	($/t)	450	434	455	448
Income		18,873	21,328	17,887	12,350
Operating Costs					
Chemicals and fertiliser		1,235	1,160	1,178	1,094
Fuel and oil		287	294	346	324
Repairs and maintenance		520	555	454	509
Labour - general		1,406	1,151	1,146	1,096
Labour - pruning and training		1,521	2,241	2,262	2,422
Labour - thinning		305	1,070	640	553
Labour - picking		2,818	3,731	3,111	2,338
Total Labour Cost		*6,050*	*8,193*	*7,158*	*6,410*
Other operating costs		1,121	1,399	2,392	1,585
Total operating costs		9,212	11,600	11,527	9,922
as a % of income		49%	54%	64%	80%
Operating Surplus		9,660	9,727	6,360	2,429
Depreciation					
Plant & equipment (15%)		246	246	219	246
Orchard development (5.9%, 5.3%, 1.3%)		1,525	1,525	1,525	1,525
Owners Labour		1,840	1,840	1,840	1,840
Earnings Before Interest and Tax		6,049	6,116	2,776	(1,182)
Based on equivalent yield					
Return on Capital		16%	16%	7%	-3%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		320	393	421	379
Lost production redevelopment		566	638	533	365
Plant and equipment		115	115	102	115
Developed land value		2,515	2,515	2,515	2,515
Total Imputed Interest Costs		3,516	3,661	3,571	3,374
Earnings After Imputed Interest		2,533	2,455	(795)	(4,556)
Based on equivalent yield					
Total Cost of Production		16,339	18,872	18,682	16,907
(including owners labour, orchard depreciation and imputed interest)					
Based on equivalent yield					

Group Summary - Trellis Peach Cost of Production ($/t)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	42	49	39	28
Net Return	($/t)	450	434	455	448
Income		450	434	455	448
Operating Costs					
Chemicals and fertiliser		29	24	30	39
Fuel and oil		7	6	9	12
Repairs and maintenance		12	11	12	18
Labour - general		33	23	29	39
Labour - pruning and training		36	46	58	87
Labour - thinning		7	22	16	20
Labour - picking		67	76	80	84
Total Labour Cost		*144*	*167*	*184*	*229*
Other operating costs		27	29	61	57
Total operating costs		219	237	296	354
as a % of income		49%	54%	64%	80%
Operating Surplus		230	199	163	87
Depreciation					
Plant & equipment (15%)		6	5	6	9
Orchard development (5.9%, 5.3%, 1.3%)		36	31	39	54
Owners Labour		44	38	47	66
Earnings Before Interest and Tax		144	125	71	(42)
Based on equivalent yield					
Return on Capital		16%	16%	7%	-3%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		8	8	11	14
Lost production redevelopment		13	13	14	13
Plant and equipment		3	2	3	4
Developed land value		60	51	64	90
Total Imputed Interest Costs		84	75	92	121
Earnings After Imputed Interest		60	50	(20)	(163)
Based on equivalent yield					
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		389	385	479	604
Based on equivalent yield					

Group Summary - F/S Peach Cost of Production ($/ha)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	30	29	26	21
Net Return	($/t)	450	429	454	448
Income		13,567	12,320	11,740	9,505
Operating Costs					
Chemicals and fertiliser		1,280	1,412	1,088	980
Fuel and oil		417	365	374	278
Repairs and maintenance		420	477	439	570
Labour - general		897	1,070	989	935
Labour - pruning and training		1,505	1,401	1,569	1,492
Labour - thinning		583	550	720	313
Labour - picking		1,673	1,677	1,855	1,330
Total Labour Cost		*4,659*	*4,698*	*5,133*	*4,070*
Other operating costs		1,051	1,156	2,039	1,532
Total operating costs		7,826	8,108	9,073	7,431
as a % of income		58%	66%	77%	78%
Operating Surplus		5,740	4,212	2,667	2,075
Depreciation					
Plant & equipment (15%)		224	224	261	245
Orchard development (5.9%, 5.3%, 1.3%)		479	479	479	479
Owners Labour		2,641	2,641	2,641	2,641
Earnings Before Interest and Tax		2,396	868	(714)	(1,290)
Based on equivalent yield					
Return on Capital		12%	4%	-3%	-6%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		308	322	361	305
Lost production redevelopment		543	499	468	383
Plant and equipment		105	101	122	116
Developed land value		1,338	1,338	1,338	1,338
Total Imputed Interest Costs		2,294	2,260	2,289	2,142
Earnings After Imputed Interest		102	(1,392)	(3,003)	(3,432)
Based on equivalent yield					
Total Cost of Production		13,464	13,712	14,743	12,938
(including owners labour, orchard depreciation and imputed interest)					
Based on equivalent yield					

Group Summary - F/S Peach Cost of Production ($/t)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	30	29	26	21
Net Return	($/t)	450	429	454	448
Income		450	429	454	448
Operating Costs					
Chemicals and fertiliser		43	49	42	47
Fuel and oil		14	13	14	13
Repairs and maintenance		14	16	17	27
Labour - general		30	37	38	45
Labour - pruning and training		50	48	60	71
Labour - thinning		19	19	28	15
Labour - picking		56	58	71	63
Total Labour Cost		*155*	*162*	*197*	*194*
Other operating costs		35	40	78	73
Total operating costs		261	280	349	354
as a % of income		58%	66%	77%	78%
Operating Surplus		191	145	103	99
Depreciation					
Plant & equipment (15%)		7	8	10	12
Orchard development (5.9%, 5.3%, 1.3%)		16	17	18	23
Owners Labour		88	91	102	126
Earnings Before Interest and Tax		80	30	(27)	(61)
Based on equivalent yield					
Return on Capital		12%	4%	-3%	-6%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		10	11	14	15
Lost production redevelopment		18	17	18	18
Plant and equipment		4	3	5	6
Developed land value		45	46	51	64
Total Imputed Interest Costs		76	78	88	102
Earnings After Imputed Interest		3	(48)	(116)	(163)
Based on equivalent yield					
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		449	473	567	616
Based on equivalent yield					

Group Summary - Pear Cost of Production ($/ha)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	45	46	46	46
Net Return	($/t)	249	257	290	312
Income		11,209	11,881	13,462	14,456
Operating Costs					
Chemicals and fertiliser		1,290	1,073	1,057	1,118
Fuel and oil		489	421	518	454
Repairs and maintenance		681	723	831	930
Labour - general		1,474	1,430	1,396	1,370
Labour - pruning and training		1,398	1,567	1,570	1,436
Labour - thinning		-	2	-	-
Labour - picking		2,819	3,135	2,968	3,269
Total Labour Cost		*5,691*	*6,135*	*5,934*	*6,075*
Other operating costs		1,480	1,650	2,638	2,015
Total operating costs		9,631	10,002	10,978	10,591
as a % of income		86%	84%	82%	73%
Operating Surplus		1,578	1,879	2,484	3,865
Depreciation					
Plant & equipment (15%)		225	225	258	269
Orchard development (5.9%, 5.3%, 1.3%)		97	97	97	97
Owners Labour		2,397	2,397	2,397	2,397
Earnings Before Interest and Tax		(1,141)	(840)	(268)	1,102
Based on equivalent yield					
Return on Capital		-6%	-4%	-1%	6%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		341	343	400	366
Lost production redevelopment		221	237	268	289
Plant and equipment		105	105	120	126
Developed land value		1,244	1,244	1,244	1,244
Total Imputed Interest Costs		1,911	1,929	2,032	2,025
Earnings After Imputed Interest		(3,052)	(2,769)	(2,300)	(923)
Based on equivalent yield					
Total Cost of Production		14,261	14,650	15,762	15,379
(including owners labour, orchard depreciation and imputed interest)					
Based on equivalent yield					

Group Summary - Pear Cost of Production ($/t)

(Based on equivalent yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	45	46	46	46
Net Return	($/t)	249	257	290	312
Income		249	257	290	312
Operating Costs					
Chemicals and fertiliser		29	23	23	24
Fuel and oil		11	9	11	10
Repairs and maintenance		15	16	18	20
Labour - general		33	31	30	30
Labour - pruning and training		31	34	34	31
Labour - thinning		-	0	-	-
Labour - picking		63	68	65	71
Total Labour Cost		*126*	*133*	*129*	*132*
Other operating costs		33	36	57	44
Total operating costs		214	217	239	230
as a % of income		86%	84%	82%	73%
Operating Surplus		35	41	54	84
Depreciation					
Plant & equipment (15%)		5	5	6	6
Orchard development (5.9%, 5.3%, 1.3%)		2	2	2	2
Owners Labour		53	52	52	52
Earnings Before Interest and Tax		(25)	(18)	(6)	24
Based on equivalent yield					
Return on Capital		-6%	-4%	-1%	6%
Based on equivalent yield					
Less Imputed Interest					
Operating capital		8	7	9	8
Lost production redevelopment		5	5	6	6
Plant and equipment		2	2	3	3
Developed land value		28	27	27	27
Total Imputed Interest Costs		42	42	44	44
Earnings After Imputed Interest		(68)	(60)	(50)	(20)
Based on equivalent yield					
Total Cost of Production		317	318	343	334
(including owners labour, orchard depreciation and imputed interest)					
Based on equivalent yield					

10.3 CONCLUSIONS FROM THE STUDY (EQUIVALENT YIELD)

The small sample of nine orchards makes it difficult to draw firm conclusions about the whole region. Therefore, the following remarks are provided as a guide only and are specific to the study orchards.

The study results are also sensitive to the assumptions regarding expected equivalent yields at given tree ages.

Trellis Peaches

During the four-year study there were no new plantings of trellis canning peaches on the subject orchards. Equivalent yield began to decline because some blocks moved from their fully bearing yields to reduced yields in later life. This had a subsequent negative effect on profitability.

Freestanding Peaches

Freestanding trees were being planted and removed during each season in this study. As a result, although drought and frost affected the data in 2002/03 and 2003/04, the longer-term effect was not as severe as shown in the actual data for these plantings.

Pears

As with the actual data, the equivalent data indicates that the steady increase in net return each season has resulted in an annual improvement in business performance.

11 Appendix 2: Full Economic Cost

11.1 FOUR-YEAR SURVEY RESULTS

Group Summary - Trellis Peach Cost of Production ($/ha)

(Based on actual yield)		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	29	31	32	30
Net Return	($/t)	450	434	455	448
Income		13,157	13,295	14,456	13,634
Operating Costs					
Chemicals and fertiliser		1,235	1,160	1,178	1,094
Fuel and oil		287	294	346	324
Repairs and maintenance		520	555	454	509
Labour - general		1,406	1,151	1,146	1,096
Labour - pruning and training		1,521	2,241	2,262	2,422
Labour - thinning		305	1,070	640	553
Labour - picking		1,888	2,545	2,541	2,569
Total Labour Cost		*5,120*	*7,007*	*6,588*	*6,641*
Other operating costs		1,121	1,399	2,392	1,585
Total operating costs		8,282	10,414	10,957	10,153
as a % of income		63%	78%	76%	74%
Operating Surplus		4,874	2,881	3,499	3,481
Depreciation					
Plant & equipment (15%)		246	246	219	246
Orchard development (5.9%, 5.3%, 1.3%)		1,525	1,525	1,525	1,525
Owners Labour		1,840	1,840	1,840	1,840
Earnings Before Interest and Tax		1,263	(730)	(85)	(130)
Return on Capital		3%	-2%	0%	0%
Less Imputed Interest					
Operating capital		320	393	421	379
Lost production redevelopment		395	401	431	404
Plant and equipment		115	115	102	115
Developed land value		2,515	2,515	2,515	2,515
Total Imputed Interest		3,344	3,424	3,470	3,413
Earnings After Imputed Interest		(2,080)	(4,153)	(3,554)	(3,543)
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		15,237	17,449	18,010	17,177

Group Summary - Trellis Peach Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		1,464	1,464	1,464	1,464
Income					
Yield	(t/ha)	29	31	32	30
Net Return	($/t)	450	434	455	448
Income		450	434	455	448
Operating Costs					
Chemicals and fertiliser		42	38	37	36
Fuel and oil		10	10	11	11
Repairs and maintenance		18	18	14	17
Labour - general		48	37	36	36
Labour - pruning and training		52	72	71	80
Labour - thinning		10	35	20	18
Labour - picking		65	82	79	85
Total Labour Cost		*175*	*226*	*206*	*218*
Other operating costs		38	45	75	52
Total operating costs		284	340	345	334
as a % of income		63%	78%	76%	74%
Operating Surplus		166	94	110	114
Depreciation					
Plant & equipment (15%)		8	8	7	8
Orchard development (5.9%, 5.3%, 1.3%)		52	50	48	50
Owners Labour		63	60	58	61
Earnings Before Interest and Tax		43	(24)	(3)	(5)
Return on Capital		3%	-2%	0%	0%
Less Imputed Interest					
Operating capital		11	13	13	12
Lost production redevelopment		13	13	14	13
Plant and equipment		4	4	3	4
Developed land value		86	82	79	83
Total Imputed Interest		114	112	109	112
Earnings After Imputed Interest		(71)	(136)	(112)	(116)
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		521	570	566	564

Group Summary - F/S Peach Cost of Production ($/ha)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	32	28	23	19
Net Return	($/t)	450	429	454	448
Income		14,493	12,185	10,612	8,654
Operating Costs					
Chemicals and fertiliser		1,280	1,412	1,088	980
Fuel and oil		417	365	374	278
Repairs and maintenance		420	477	439	570
Labour - general		897	1,070	989	935
Labour - pruning and training		1,505	1,401	1,569	1,492
Labour - thinning		583	550	720	313
Labour - picking		1,726	1,531	1,635	1,202
Total Labour Cost		*4,711*	*4,552*	*4,913*	*3,942*
Other operating costs		1,051	1,156	2,039	1,532
Total operating costs		7,879	7,962	8,853	7,303
as a % of income		54%	65%	83%	84%
Operating Surplus		6,614	4,223	1,759	1,351
Depreciation					
Plant & equipment (15%)		224	224	261	245
Orchard development (5.9%, 5.3%, 1.3%)		479	479	479	479
Owners Labour		2,641	2,641	2,641	2,641
Earnings Before Interest and Tax		3,270	879	(1,622)	(2,014)
Return on Capital		16%	4%	-8%	-10%
Less Imputed Interest					
Operating Capital		308	322	361	305
Lost production redevelopment		580	493	425	345
Plant and equipment		105	101	122	116
Developed land value		1,338	1,338	1,338	1,338
Total Imputed Interest		2,330	2,254	2,245	2,104
Earnings After Imputed Interest		940	(1,375)	(3,867)	(4,117)
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		13,553	13,560	14,479	12,772

Group Summary - F/S Peach Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		520	529	536	533
Income					
Yield	(t/ha)	32	28	23	19
Net Return	($/t)	450	429	454	448
Income		450	429	454	448
Operating Costs					
Chemicals and fertiliser		40	50	46	51
Fuel and oil		13	13	16	14
Repairs and maintenance		13	17	19	30
Labour - general		28	38	42	48
Labour - pruning and training		47	49	67	77
Labour - thinning		18	19	31	16
Labour - picking		54	54	70	62
Total Labour Cost		*146*	*160*	*210*	*204*
Other operating costs		33	41	87	79
Total operating costs		245	280	378	378
as a % of income		54%	65%	83%	84%
Operating Surplus		205	149	76	70
Depreciation					
Plant & equipment (15%)		7	8	11	13
Orchard development (5.9%, 5.3%, 1.3%)		15	17	20	25
Owners Labour		82	93	113	137
Earnings Before Interest and Tax		101	31	(69)	(105)
Return on Capital		16%	4%	-8%	-10%
Less Imputed Interest					
Operating Capital		10	11	15	16
Lost production redevelopment		18	17	18	18
Plant and equipment		3	4	5	6
Developed land value		42	47	57	69
Total Imputed Interest		72	79	96	109
Earnings After Imputed Interest		29	(48)	(165)	(213)
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		420	478	619	661

Group Summary - Pear Cost of Production ($/ha)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	54	55	54	54
Net Return	($/t)	249	257	290	312
Income		13,344	14,144	15,871	16,771
Operating Costs					
Chemicals and fertiliser		1,290	1,073	1,057	1,118
Fuel and oil		489	421	518	454
Repairs and maintenance		681	723	831	930
Labour - general		1,474	1,430	1,396	1,370
Labour - pruning and training		1,398	1,567	1,570	1,436
Labour - thinning		-	2	-	-
Labour - picking		3,356	3,733	3,498	3,778
Total Labour Cost		*6,228*	*6,732*	*6,463*	*6,585*
Other operating costs		1,480	1,650	2,638	2,015
Total operating costs		10,168	10,599	11,507	11,101
as a % of income		76%	75%	73%	66%
Operating Surplus		3,176	3,545	4,364	5,671
Depreciation					
Plant & equipment (15%)		225	225	258	269
Orchard development (5.9%, 5.3%, 1.3%)		97	97	97	97
Owners Labour		2,397	2,397	2,397	2,397
Earnings Before Interest and Tax		457	826	1,612	2,908
Return on Capital		2%	4%	8%	15%
Less Imputed Interest					
Operating capital		341	343	400	366
Lost production redevelopment		263	282	315	335
Plant and equipment		105	105	120	126
Developed land value		1,244	1,244	1,244	1,244
Total Imputed Interest		1,953	1,974	2,080	2,070
Earnings After Imputed Interest		(1,497)	(1,149)	(468)	837
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		14,841	15,293	16,340	15,935

Group Summary - Pear Cost of Production ($/t)

(Based on actual yield)

		2000/01	2001/02	2002/03	2003/04
System					
Tree Density (trees/ha)		290	290	292	311
Income					
Yield	(t/ha)	54	55	55	54
Net Return	($/t)	249	257	290	312
Income		249	257	290	312
Operating Costs					
Chemicals and fertiliser		24	20	19	21
Fuel and oil		9	8	10	8
Repairs and maintenance		13	13	15	17
Labour - general		28	26	26	25
Labour - pruning and training		26	29	29	27
Labour - thinning		-	0	-	-
Labour - picking		63	68	64	70
Total Labour Cost		*116*	*123*	*119*	*122*
Other operating costs		28	30	48	37
Total operating costs		190	193	211	206
as a % of income		76%	75%	73%	66%
Operating Surplus		59	64	79	106
Depreciation					
Plant & equipment (15%)		4	4	5	5
Orchard development (5.9%, 5.3%, 1.3%)		2	2	2	2
Owners Labour		45	44	44	45
Earnings Before Interest and Tax		9	14	28	54
Return on Capital		2%	4%	8%	15%
Less Imputed Interest					
Operating capital		6	6	7	7
Lost production redevelopment		5	5	6	6
Plant and equipment		2	2	2	2
Developed land value		23	23	23	23
Total Imputed Interest		36	36	38	39
Earnings After Imputed Interest		(28)	(21)	(9)	16
Total Cost of Production (including owners labour, orchard depreciation and imputed interest)		277	278	300	296

11.2 CONCLUSIONS FROM THE STUDY (FULL ECONOMIC COST)

As previously stated, RMCG's standard methodology for Cost of Production studies includes the full economic costs associated with the subject crop. The ultimate aim of each business is to cover all its costs during each season.

For the study growers, the four-year results indicate that:

- Trellis peach blocks were unable to meet their full economic costs in any year;
- Freestanding peach blocks met their full economic costs during one year and have the underlying potential to do so again;
- Pear blocks effectively met their full economic costs during two years.

12 Appendix 3: Explanation of Checks

Orchard System

Each grower provided information about varieties, area, tree numbers and planting style. Whilst some orchards could be considered to have recognised high-density planting systems for peaches, the majority have adapted trellis systems that suit their growing and financial requirements. The highest and lowest densities in 2000/2001 for each category of fruit were as follows:

Trees/ha	Highest Density	Lowest Density	Average Density	Census Average
Trellis peaches	1,982	912	1,451	1,382
Freestanding peaches	695	250	539	431
Pears	341	247	290	327

This means that capital costs for this study are likely to be slightly higher than regional figures. Also, time to full bearing may be lower or income higher, when compared to the regional industry.

Equivalent Yield (Calculation)

Equivalent yield is calculated from the actual yield figure whilst allowing for currently immature plantings, and declining final yields towards the end of tree life in the case of canning peaches. The steering committee agreed indicative degrees of maturity through each year of tree-life.

Based on the planting configurations of the orchards surveyed and five years of harvest records, the average mature yields derived for the study (taking seasonal variation into account) are trellis peaches, 39 t/ha; freestanding peaches, 34 t/ha; and pears, 55 t/ha. It is not known if this is higher or lower compared to the regional industry. Note that equivalent results from the study were higher than this in some cases, reflecting higher yields in the two years surveyed, and higher densities of very young plantings.

Equivalent Yield (Sensitivity)

Our methodology is affected very significantly by the assumptions used to calculate equivalent yield. The inclusion of equivalent yield over four years of the study may provide an enhanced understanding of the main factors underpinning the industry. An expanded sample size would also confirm whether the assumptions used on orchard replanting rates are appropriate.

Price Received

Each grower provided information that identified the number of tonnes delivered to the canneries and the total sum paid for all grades. Therefore, the resulting average price paid per tonne delivered includes quality incentives and disincentives.

Operating Costs

Enterprise operating costs were recorded from each grower's financial records, with adjustments being made to exclude expenditure of a capital nature, and personal expenditure. In the main, the existing accounting systems managed this information well and growers were confidently able to provide explanations as requested.

Estimating most operating expenses was straightforward but wages costs, in particular, generally required further analysis, and management accounting data was used where appropriate. It should be noted that

staff classified as general labour also performed pruning, thinning and picking tasks. In these cases, general wage costs were allocated to those specific tasks first, with the balance being allocated to general labour.

Capital Costs

The capital required to grow fruit is comprised of:

- Operating capital (ie overdraft to fund operating costs)
- Value of lost production when replacing old, producing, trees with young, non-bearing, trees.
- Value of orchard equipment
- Value of total development, including land

In this study the same imputed interest rates were applied regardless of debt position.

We applied an overdraft interest rate of 10% to the operating capital, and a core debt rate of 7% for other categories, except for the value of lost production, which is based on a proportion of income. Interest figures are based on an average interest charge obtained from National Australia Bank, possibly the largest lender to the industry. Growers' actual rates would vary from these assumptions.

Orchard Equipment

As agreed by the steering committee, the value of plant and equipment is based on written-down value, with the total equipment value being allocated to the study varieties on a per hectare basis.

Annual depreciation cost was applied at the rate of 15% of written-down value.

Development Capital Cost

In general, growers were not aware of their total block development costs. This applied particularly to pear blocks (there had been very few new plantings), but also to peach varieties. Some growers, however, had comprehensive data on development costs and these were used as a template by which to assess the specific costs for each grower.

The highest and lowest development costs for each category of fruit were as follows:

$/ha	Highest Cost	Lowest Cost	Average Cost
Trellis peaches	31,660	15,042	25,714
Freestanding peaches	11,130	6,150	9,312
Pears	9,945	5,785	7,839

In addition, a land value of $10,000/ha was added to provide the total developed land value.

Annual depreciation of the developed cost was spread over the potential commercial life of the trees. Following discussion with growers, the study assumes that Williams' trees have an effective commercial life of 80 years. The applied depreciation rates are trellis peaches, 5.9% (17 years); freestanding peaches, 5.3% (19 years); and pears, 1.25% (80 years).

Imputed Interest on Operating Capital

Operating capital was calculated from the sum of all operating costs, less picking costs. It is a measure of the capital required to fund the operation during the growing season (similar to overdraft). Picking costs are assumed to be close to the time when payment is received, and have not been included.

Interest is calculated at 5% of the Operating Capital described above (assumes an overdraft rate of 10% for six months).

Imputed Interest on Lost Production during Development

This is the interest on the loss of income from non-mature production, over the life of the trees. It is equivalent to an annualised proportion of estimated full-life income in the following ratios, trellis peaches, 3%; freestanding peaches, 4%; pears, 2%.

Owner's Labour Allowance

The steering committee agreed a rate of $75,000 per year for each working owner. The allowance was allocated on a per hectare basis, with a further adjustment being made for the few examples where fresh-market fruit was grown in addition to canning fruit.