

Farm Budget Handbook 2003

NSW Citrus

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TABLE OF CONTENTS

INTRODUCTION.....	1
GROSS MARGINS.....	2
What Is A Gross Margin?	2
How Can Gross Margins Be Used?	2
Use Gross Margins Carefully!	2
Enterprise Budgets	3
Budget Contents	3
RIVERINA.....	4
Mid Season Oranges	5
Valencia	7
Washington Navel.....	11
Late Navel.....	13
Clementine mandarin.....	15
Satsuma mandarin	17
SUNRAYSIA.....	20
Valencia	21
Early Navel	23
Washington Navel.....	25
Late Navel.....	27
Imperial mandarin	29
CENTRAL COAST	32
Valencia	33
Washington Navel.....	35
Lemons (Standard Density Planting)	37
Lemons (Double Density Planting)	39
DEVELOPMENT BUDGETS	41
Basic Assumptions	42
Development Budget – Navel – Standard Density	47
Development Budget - Imperial Mandarins	57
Development Budget – Mid Season Oranges	67
Development Budget – High Density Navel Planting	77
Development Budget – Reworking.....	93
APPENDICES	102
APPENDIX 1: WATER COSTS	103
APPENDIX 2: TRACTOR OPERATING COSTS	106
APPENDIX 3: IMPLEMENTS OPERATING COSTS	107

INTRODUCTION

This handbook presents citrus gross margin budgets for the Riverina, Sunraysia, and Central Coast. Development budgets have also been constructed for replant and rework scenarios for the Sunraysia and MIA districts. These cashflow budgets are discussed in more detail in the second section of this handbook.

The budgets are **only a guide** to the relative profitability of the different enterprises, however they should not be injudiciously applied to individual situations. The budgets are influenced not only by general factors such as prices, yields, costs, etc., but also by individual characteristics of each farm. Be aware that the budgets do not incorporate taxation into the cash flows. Before using any information from this booklet, all of the assumptions used to develop the budgets should be read and understood by the user. Professional financial advice should be obtained to make the budgets more meaningful to your specific financial circumstances (i.e. taxation, whole farm cash flow, etc)

It is obviously impractical to present budgets for the multitude of situations that may arise. The enterprises analysed here are based on average production and conform to management routines as suggested by District Horticulturists, researchers, and members of industry. As it is possible that producers will not exactly match what is outlined here, the **budgets should be adjusted to suit their own situation**. Minor changes to some of the variables can dramatically change the profitability of an enterprise and thus it is important for producers to develop their own budgets to suit their circumstances. Yield and prices are two of the main variable costs that can significantly affect gross margin returns. A sensitivity analysis is provided to assist in obtaining an estimate of gross margin returns with different yields, prices and finance. Other variable costs that can significantly impact on a gross margin are pruning and hand thinning.

This booklet is only the starting point to developing a citrus budget. To aid producers in developing a budget, an Excel copy of selected long term budgets are available from the NSW Agriculture Farm Business & Trade Web site (Development Budgets) and the ACG “Season Update” web page (see below : Budget Updates). By using the spreadsheets you will be able to develop a more personalised budget guide and experiment with different scenarios to obtain a better understanding of the enterprise you are investigating. The Excel spreadsheets available from the web are only a guide as they do not include a detail analysis of overhead costs, fixed costs, labour commitments and taxation considerations. The spreadsheets from the web are also a guide and are limited to their design constraints. Spreadsheet users should contact agricultural advisors and accountants for specific information on cultural practices and financial information.

Budget Updates

Regular updates of this booklet will be posted on the NSW Agriculture web site (Farm Business & Trade : Farm Enterprise Budgets : www.agric.nsw.gov.au/econ/budget) in an Adobe Acrobat PDF version. A link to the budget will also be posted from the ACG “Season Update” Fact sheet web page (www.austcitrus.org.au/season). To go to the “Factsheet” page from the “Season Update” page, click on the “Factsheet” page link or animation.

GROSS MARGINS

What Is A Gross Margin?

The type of budget used is a gross margin. A gross margin can be defined as the gross income from an enterprise less the variable costs incurred in achieving it.

Variable costs are those costs directly attributable to an enterprise and which vary in proportion to the size of an enterprise. For example, if the area of oranges grown doubles, then the variable costs associated with growing, such as chemicals, and fertilisers, will also roughly double.

The gross margin is not gross profit because it does not include fixed or overhead cost such as depreciation, interest payments, rates, insurance and permanent labour which have to be met regardless of enterprise size.

Gross margins are generally quoted per unit of the most limited resource eg. land, irrigation water, capital, labour. It is common for crop gross margins to be quoted on a per hectare basis.

How Can Gross Margins Be Used?

The calculation of a gross margin is the essential first step in farm budgeting and planning. It enables you to directly compare the relative profitability of similar enterprises, and consequently, provides a starting point to deciding or altering the farm's overall enterprise mix.

Gross margins can be used to analyse actual enterprise performance. Comparing your own gross margins with standards for the district is a worthwhile exercise. Major differences may be explained by particular farm characteristics but may also indicate areas where significant improvements can be made.

Use Gross Margins Carefully!

Gross margins need to be used carefully when using them as a guide to deciding on the farms overall enterprise mix. Because overhead costs are excluded, it is advisable to only make comparisons of gross margins between enterprises which use similar resources.

Gross margins have been determined on a per tonne and per hectare basis. This implies per tonne harvested, and not per tonne packed.

If major changes are being considered, more comprehensive budgeting techniques are required to indicate the real profitability situation.

Outlined below is a brief summary of factors which gross margins fail to take account of and which need to be considered when contemplating a major enterprise change:

i) Resource requirements

It must be firstly established whether there is sufficient land, labour and capital to implement the desired change. The suggested most profitable enterprise mix must be technically feasible in terms of the whole farm. For example, if you are considering another crop, do you have the expertise to grow it? Is it suitable to your area and soil type? Does the crop fit in with the farm's labour availability? Does specialist machinery have to be purchased?

ii) Technical efficiency of current enterprises

Before any change is undertaken, have a look at the performance of the current enterprises run on the farm. Is there any scope for returns to be improved through adoption of new techniques or better management.

iii) Risk

Different enterprises will have different levels of associated production and price risk which need to be taken into account when deciding on enterprise mix. For example, some crops involve more production risks than others, due to susceptibility to insect pests. Other crops may receive widely fluctuating prices from season to season, and consequently, involve substantial price risk.

Additionally, in terms of the whole farm, thought should be given to spreading risks through strategies such as diversification, ie. “not putting all your eggs in the one basket” by growing a number of different crops.

iv) Cashflow

A comparison of gross margin figures alone does not indicate the nature of the work nor its appeal to the prospective producer.

Enterprise Budgets

USE BUDGETS AS A GUIDE ONLY

This handbook presents crop gross margin budgets which are intended to provide a starting point in developing your own budgets.

The budgets are calculated using:

- Achievable crop yields for the region that are consistent with the operations given.
- Product prices (**excluding GST**).
- Current cost of production.
- Technical information supplied by District Horticulturists.
- Water & machinery costs provided in the appendices (\$10/ML irrigation maintenance (pump & lines) is included)

The degree to which these budgets reflect actual crop returns will be influenced not only by general factors common to all farms, such as prices and seasonal

conditions, but also by the individual farm characteristics such as soil type, crop rotation, management, etc. More details about the assumption are in the Development budgets section.

Consequently, it is strongly recommended that the budgets be used as a GUIDE ONLY to developing your own budgets and should be changed to take account of movements in crop prices, changes in seasonal conditions, and individual farm characteristics.

For departmental recommendations on fertilisers, chemicals and other inputs, consult your local NSW Agriculture office.

Budget Contents

Each budget is comprised of the following sections:

Gross Margin Budget

The gross margin budget section provides a summary of income and variable costs for the particular crop and a blank section for the grower to enter individual farm figures.

Table 1: Effect of Yield and Price on Gross Margin

This section is presented with each budget to allow the grower to look at the effect on gross margin per hectare given variations in yields are assigned only to variations in seasonal conditions and managerial ability rather than increasing certain inputs in the budgets. Growers believing they can achieve higher yields with higher inputs should account for the cost of the inputs in their budgets.

The figure enclosed in the box represents the original gross margin under base yield and price assumptions. All other gross margin figures located in the table are based on the same budget but with different combinations of both yield and price. The labour cost estimate in the table is only a calculation of the tractor use hours used in the gross margin and a casual labour cost.

RIVERINA

Enterprise **ORANGES - Mid Season Oranges**
 Description Drip irrigation with herbicide/sod culture Year: 2003
 Location Riverina, NSW, Australia

GROSS MARGIN BUDGET:

1 ha

INCOME:

50 T/ha @ \$200 /T
A. Total Income/ha

Standard Budget	Your Budget
\$10,000	
\$10,000	

VARIABLE COSTS:

Irrigation

Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04
Fixed Levies		\$143.77 /Ha	\$143.77
Power	6.0 ML/ha	\$23.00 /ML	\$138.00
Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00

Fertiliser

1 x Urea (fertigation)	0.35 T/ha	\$405 /T	\$141.75
1 x Double Super (banded)	0.10 T/ha	\$500 /T	\$50.00
1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$12.04

Insect Control

1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24
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Disease Control

1 x Copper Oxychloride	5.3 kg/ha	\$4.00 /kg	\$21.20
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Weed Control

1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75
4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00
2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00

Crop Management

1 x Hedging (one side)		\$105 /hr	\$105.00
1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00

Tractor costs

6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84
20 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$12.00
5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00
2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00
1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40
2 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$53.64
1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09
1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70
1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$87.75

Harvest

Contract Machine Harvest	50 T/ha	\$35.00 /T	\$1,750.00
Cartage	50 T/ha	\$3.50 /T	\$175.00
Levies	50 T/ha	\$5.75 /T	\$287.50

B. Total Variable Costs \$3,786.71

Gross Margin per ha (A-B) \$6,213.29

Enterprise **ORANGES - Mid Season Oranges**
 Description Drip irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$75	\$100	\$125	\$150	\$200	\$250	\$275	\$300	\$325
35	-\$498	\$377	\$1,252	\$2,127	\$3,877	\$5,627	\$6,502	\$7,377	\$8,252
40	-\$344	\$656	\$1,656	\$2,656	\$4,656	\$6,656	\$7,656	\$8,656	\$9,656
45	-\$190	\$935	\$2,060	\$3,185	\$5,435	\$7,685	\$8,810	\$9,935	\$11,060
50	-\$37	\$1,213	\$2,463	\$3,713	\$6,213	\$8,713	\$9,963	\$11,213	\$12,463
55	\$117	\$1,492	\$2,867	\$4,242	\$6,992	\$9,742	\$11,117	\$12,492	\$13,867
60	\$271	\$1,771	\$3,271	\$4,771	\$7,771	\$10,771	\$12,271	\$13,771	\$15,271
65	\$425	\$2,050	\$3,675	\$5,300	\$8,550	\$11,800	\$13,425	\$15,050	\$16,675

Notes:

Planting Density - 450 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 38.5 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$539 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

Note: The fruit price selected in the gross margin is based on a juice contract price. This price is assumed to be higher than the valencia price due to an expected premium for out of season fruit.

The management practices or products outlined in the budget does not imply a recommendation by NSW Agriculture. The management practices and products outlined in the budget are only a guide to costs and are of practices that may currently, or may be anticipated to be used in the field.

Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **ORANGES - Valencia**
 Description Drip irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

INCOME:

35 t/ha @ \$160 /T

A. Total Income/ha

Standard Budget	Your Budget
\$5,600	
\$5,600	

VARIABLE COSTS:

Irrigation

Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04
Fixed Levies		\$143.77 /Ha	\$143.77
Power	6.0 ML/ha	\$23.00 /ML	\$138.00
Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00

Fertiliser

1 x Urea (fertigation)	0.25 T/ha	\$405 /T	\$101.25
1 x Double Super (banded)	0.10 T/ha	\$500 /T	\$50.00
1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$12.04

Insect Control

1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24
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Disease Control

1 x Copper Oxychloride	5.3 kg/ha	\$4.00 /kg	\$21.20
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Weed Control

1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75
4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00
2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00

Crop Management

1 x Hedging (one side)		\$105 /hr	\$105.00
1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00

Tractor costs

6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84
25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00
5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00
2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00
1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40
2 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$53.64
1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09
1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70
1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$61.43

Harvest

Contract Harvest	35 t/ha	\$64.00 /T	\$2,240.00
Cartage	35 t/ha	\$3.50 /T	\$122.50
Levies	35 t/ha	\$5.75 /T	\$201.25

B. Total Variable Costs

\$4,074.14

Gross Margin per ha (A-B)

\$1,525.86

Enterprise **ORANGES - Valencia**
 Description Drip irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$60	\$85	\$110	\$135	\$160	\$185	\$210	\$235	\$260
20	-\$1,775	-\$1,275	-\$775	-\$275	\$225	\$725	\$1,225	\$1,725	\$2,225
25	-\$1,842	-\$1,217	-\$592	\$33	\$658	\$1,283	\$1,908	\$2,533	\$3,158
30	-\$1,908	-\$1,158	-\$408	\$342	\$1,092	\$1,842	\$2,592	\$3,342	\$4,092
35	-\$1,974	-\$1,099	-\$224	\$651	\$1,526	\$2,401	\$3,276	\$4,151	\$5,026
40	-\$2,040	-\$1,040	-\$40	\$960	\$1,960	\$2,960	\$3,960	\$4,960	\$5,960
45	-\$2,107	-\$982	\$143	\$1,268	\$2,393	\$3,518	\$4,643	\$5,768	\$6,893
50	-\$2,173	-\$923	\$327	\$1,577	\$2,827	\$4,077	\$5,327	\$6,577	\$7,827

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 37.3 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$522 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

Note: The fruit price selected in the gross margin is based on a juice contract price.

The management practices or products outlined in the budget does not imply a recommendation by NSW Agriculture. The management practices and products outlined in the budget are only a guide to costs

Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **ORANGES - Early Navel**
 Description Drip irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

				Standard	Your
				Budget	Budget
INCOME:					
	30 T/ha	@	\$350 /T	\$10,500	
A. Total Income/ha				\$10,500	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04	
	Fixed Levies		\$143.77 /Ha	\$143.77	
	Power	6.0 ML/ha	\$23.00 /ML	\$138.00	
	Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00	
Fertiliser					
	1 x Urea (fertigation)	0.25 T/ha	\$405 /T	\$101.25	
	1 x Double Super (banded)	0.10 T/ha	\$500 /T	\$50.00	
	2 x ZM (foliar)	7 kg/ha	\$2 /kg	\$24.08	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter	4.0 L/ha	\$12.25 /L	\$49.00	
	1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control					
	1 x Copper Oxychloride	5.3 kg/ha	\$4.00 /kg	\$21.20	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75	
	4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00	
	2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00	
Pruning					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
	0.3 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$40.95	
	0.3 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$34.65	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
	0.3 x Hand Fruit Thinning	10 min/tree	\$14.00 /hr	\$364.00	
Tractor costs					
	6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84	
	20 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$12.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00	
	1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40	
	4 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$107.28	
	1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$52.65	
Harvest					
	Contract Harvest	30 T/ha	\$64.00 /T	\$1,920.00	
	Cartage	30 T/ha	\$3.50 /T	\$105.00	
	Levies	30 T/ha	\$5.75 /T	\$172.50	
B. Total Variable Costs				\$5,728.73	
Gross Margin per ha (A-B)				\$4,771.27	

Enterprise **ORANGES - Early Navel**
 Description Drip irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$200	\$250	\$300	\$350	\$400	\$450	\$500	\$550	\$600
15	-\$1,630	-\$880	-\$130	\$620	\$1,370	\$2,120	\$2,870	\$3,620	\$4,370
20	-\$996	\$4	\$1,004	\$2,004	\$3,004	\$4,004	\$5,004	\$6,004	\$7,004
25	-\$362	\$888	\$2,138	\$3,388	\$4,638	\$5,888	\$7,138	\$8,388	\$9,638
30	\$271	\$1,771	\$3,271	\$4,771	\$6,271	\$7,771	\$9,271	\$10,771	\$12,271
35	\$905	\$2,655	\$4,405	\$6,155	\$7,905	\$9,655	\$11,405	\$13,155	\$14,905
40	\$1,539	\$3,539	\$5,539	\$7,539	\$9,539	\$11,539	\$13,539	\$15,539	\$17,539
45	\$2,173	\$4,423	\$6,673	\$8,923	\$11,173	\$13,423	\$15,673	\$17,923	\$20,173

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 39.5 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$553 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Enterprise **ORANGES - Washington Navel**
 Description Drip Irrigation with herbicide/sod culture Year: 2003
 Location Riverina, NSW, Australia

GROSS MARGIN BUDGET:				1 ha	Standard Budget	Your Budget
INCOME:						
	35 T/ha	@	\$300 /T		\$10,500	
				A. Total Income/ha	\$10,500	
VARIABLE COSTS:						
Irrigation						
	Water & Levies		6.0 ML/ha	\$23.34 /ML	\$140.04	
	Fixed Levies			\$143.77 /Ha	\$143.77	
	Power		6.0 ML/ha	\$23.00 /ML	\$138.00	
	Maintenance (pump & system)		6.0 ML/ha	\$10.00 /ML	\$60.00	
Fertiliser						
	1 x Urea (fertigation)		0.25 T/ha	\$405 /T	\$101.25	
	1 x Double Super (banded)		0.10 T/ha	\$500 /T	\$50.00	
	2 x ZM (foliar)		7 kg/ha	\$2 /kg	\$24.08	
Insect Control						
	1 x Oil Spray (1%)		80.0 L/ha	\$1.88 /L	\$150.24	
	1 x Bio Control (Aphytis)		0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter		4.0 L/ha	\$12.25 /L	\$49.00	
	1 x Pest Monitoring		\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control						
	1 x Copper Oxychloride		5.3 kg/ha	\$4.00 /kg	\$21.20	
Weed Control						
	1 x Bromacil/Diuron		2.5 kg/ha	\$19.50 /kg	\$48.75	
	4 x Glyphosate		4.0 L/ha	\$6.00 /L	\$96.00	
	2 x Glyphosate (spot spraying)		1.0 L/ha	\$6.00 /L	\$12.00	
Crop Management Sprays						
	2 x G.A. + Wetter (10ppm)		0.20 kg/ha	\$840.00 /kg	\$336.00	
Pruning						
	1 x Hand Pruning		10 min/tree	\$14.00 /hr	\$1,213.33	
	0.3 x Hedging (One side)		1.3 hr/ha	\$105.00 /hr	\$40.95	
	0.3 x Mechanical Topping		1.1 hr/ha	\$105.00 /hr	\$34.65	
	0.5 x Mechanical Skirting		1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management						
	1 x Leaf analysis (1 analysis/2ha)		0.5 analysis	\$80.00 /analysis	\$40.00	
	0.3 x Hand Fruit Thinning		10 min/tree	\$14.00 /hr	\$364.00	
Tractor costs						
	6 x Sod mowing		0.5 hr/ha	\$12.28 /hr	\$36.84	
	20 x Check Emitters		0.2 hr/ha	\$3.00 /hr	\$12.00	
	5 x Herbicide		2.0 hr/ha	\$13.10 /hr	\$131.00	
	4 x Spot Spray (4W Bike)		2.0 hr/ha	\$3.00 /hr	\$24.00	
	1 x Fertiliser		2.0 hr/ha	\$12.20 /hr	\$24.40	
	4 x Air blast Spray		2.0 hr/ha	\$13.41 /hr	\$107.28	
	2 x Oscillating boom Spray		3.0 hr/ha	\$15.03 /hr	\$90.18	
	1 x Mulch Prunings		1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement		0.15 hr/T Fruit	\$11.70 /hr	\$61.43	
Harvest						
	Contract Harvest		35 T/ha	\$64.00 /T	\$2,240.00	
	Cartage		35 T/ha	\$3.50 /T	\$122.50	
	Levies		35 T/ha	\$5.75 /T	\$201.25	
				B. Total Variable Costs	\$6,496.84	
				Gross Margin per ha (A-B)	\$4,003.16	

Enterprise **ORANGES - Washington Navel**
 Description Drip Irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$150	\$200	\$250	\$300	\$350	\$400	\$450	\$500	\$550
20	-\$2,398	-\$1,398	-\$398	\$602	\$1,602	\$2,602	\$3,602	\$4,602	\$5,602
25	-\$2,014	-\$764	\$486	\$1,736	\$2,986	\$4,236	\$5,486	\$6,736	\$7,986
30	-\$1,631	-\$131	\$1,369	\$2,869	\$4,369	\$5,869	\$7,369	\$8,869	\$10,369
35	-\$1,247	\$503	\$2,253	\$4,003	\$5,753	\$7,503	\$9,253	\$11,003	\$12,753
40	-\$863	\$1,137	\$3,137	\$5,137	\$7,137	\$9,137	\$11,137	\$13,137	\$15,137
45	-\$479	\$1,771	\$4,021	\$6,271	\$8,521	\$10,771	\$13,021	\$15,271	\$17,521
50	-\$96	\$2,404	\$4,904	\$7,404	\$9,904	\$12,404	\$14,904	\$17,404	\$19,904

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 47.3 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$662 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

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Enterprise **ORANGES - Late Navel**
 Description Drip Irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

				Standard	Your
				Budget	Budget
INCOME:					
	25 T/ha	@	\$350 /T	\$8,750	
A. Total Income/ha				\$8,750	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04	
	Fixed Levies		\$143.77 /Ha	\$143.77	
	Power	6.0 ML/ha	\$23.00 /ML	\$138.00	
	Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00	
Fertiliser					
	1 x Urea (fertigation)	0.25 T/ha	\$405 /T	\$101.25	
	1 x Double Super (banded)	0.10 T/ha	\$500 /T	\$50.00	
	2 x ZM (foliar)	7 kg/ha	\$2 /kg	\$24.08	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter	4.0 L/ha	\$12.25 /L	\$49.00	
	1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control					
	1 x Copper Oxychloride	5.3 kg/ha	\$4.00 /kg	\$21.20	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75	
	4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00	
	2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00	
Crop Management Sprays					
	1 x G.A. + Wetter (10ppm)	0.20 kg/ha	\$840.00 /kg	\$168.00	
Pruning					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
	0.3 x Hedging (One side)	1.3 hr/ha	\$105.00 /hr	\$40.95	
	0.3 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$34.65	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
	0.2 x Hand Fruit Thinning	10 min/tree	\$14.00 /hr	\$242.67	
Tractor costs					
	6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84	
	20 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$12.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00	
	1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40	
	4 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$107.28	
	2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$43.88	
Harvest					
	Contract Harvest	25 T/ha	\$64.00 /T	\$1,600.00	
	Cartage	25 T/ha	\$3.50 /T	\$87.50	
	Levies	25 T/ha	\$5.75 /T	\$143.75	
B. Total Variable Costs				\$5,445.46	
Gross Margin per ha (A-B)				\$3,304.54	

Enterprise **ORANGES - Late Navel**
 Description Drip Irrigation with herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$200	\$250	\$300	\$350	\$400	\$450	\$500	\$550	\$600
10	-\$2,347	-\$1,847	-\$1,347	-\$847	-\$347	\$153	\$653	\$1,153	\$1,653
15	-\$1,713	-\$963	-\$213	\$537	\$1,287	\$2,037	\$2,787	\$3,537	\$4,287
20	-\$1,079	-\$79	\$921	\$1,921	\$2,921	\$3,921	\$4,921	\$5,921	\$6,921
25	-\$445	\$805	\$2,055	\$3,305	\$4,555	\$5,805	\$7,055	\$8,305	\$9,555
30	\$188	\$1,688	\$3,188	\$4,688	\$6,188	\$7,688	\$9,188	\$10,688	\$12,188
35	\$822	\$2,572	\$4,322	\$6,072	\$7,822	\$9,572	\$11,322	\$13,072	\$14,822
40	\$1,456	\$3,456	\$5,456	\$7,456	\$9,456	\$11,456	\$13,456	\$15,456	\$17,456

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 41.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$585 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

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Enterprise **MANDARIN - Clementine**

Description Drip irrigation, herbicide/sod culture

Year: 2003

Location Riverina, NSW, Australia

GROSS MARGIN BUDGET:

1 ha

				Standard	Your
				Budget	Budget
INCOME:					
	25 T/ha	@	\$550 /T	\$13,750	
A. Total Income/ha				\$13,750	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04	
	Fixed Levies		\$143.77 /Ha	\$143.77	
	Power	6.0 ML/ha	\$23.00 /ML	\$138.00	
	Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00	
Fertiliser					
	1 x Urea (fertigation)	0.25 T/ha	\$405 /T	\$101.25	
	1 x Double Super (banded)	0.10 T/ha	\$500 /T	\$50.00	
	2 x ZM (foliar)	7 kg/ha	\$2 /kg	\$24.00	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter	4.0 L/ha	\$12.25 /L	\$49.00	
	1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control					
	1 x Copper Oxychloride	0.8 kg/ha	\$4.00 /kg	\$3.20	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75	
	4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00	
	2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00	
Pruning					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
	0.3 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$40.95	
	0.5 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$57.75	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
	1.0 x Hand Fruit Thinning	12 min/tree	\$14.00 /hr	\$1,456.00	
Tractor costs					
	6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84	
	20 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$12.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00	
	1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40	
	5 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$134.10	
	1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$43.88	
Harvest					
	Contract Mandarin Harvest	25 T/ha	\$225.00 /T	\$5,625.00	
	Cartage	25 T/ha	\$3.50 /T	\$87.50	
	Levies	25 T/ha	\$5.75 /T	\$143.75	
B. Total Variable Costs				\$10,502.62	
Gross Margin per ha (A-B)				\$3,247.38	

Enterprise **MANDARIN - Clementine**
 Description Drip irrigation, herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$350	\$400	\$450	\$500	\$550	\$600	\$650	\$700	\$750
10	-\$3,489	-\$2,989	-\$2,489	-\$1,989	-\$1,489	-\$989	-\$489	\$11	\$511
15	-\$2,910	-\$2,160	-\$1,410	-\$660	\$90	\$840	\$1,590	\$2,340	\$3,090
20	-\$2,331	-\$1,331	-\$331	\$669	\$1,669	\$2,669	\$3,669	\$4,669	\$5,669
25	-\$1,753	-\$503	\$747	\$1,997	\$3,247	\$4,497	\$5,747	\$6,997	\$8,247
30	-\$1,174	\$326	\$1,826	\$3,326	\$4,826	\$6,326	\$7,826	\$9,326	\$10,826
35	-\$595	\$1,155	\$2,905	\$4,655	\$6,405	\$8,155	\$9,905	\$11,655	\$13,405
40	-\$16	\$1,984	\$3,984	\$5,984	\$7,984	\$9,984	\$11,984	\$13,984	\$15,984

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 40.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$571 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

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Enterprise **MANDARIN - Satsuma**
 Description Drip with under tree herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

				Standard	Your
				Budget	Budget
INCOME:					
	25 T/ha	@	\$550 /T	\$13,750	
A. Total Income/ha				\$13,750	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	6.0 ML/ha	\$23.34 /ML	\$140.04	
	Fixed Levies		\$143.77 /Ha	\$143.77	
	Power	6.0 ML/ha	\$23.00 /ML	\$138.00	
	Maintenance (pump & system)	6.0 ML/ha	\$10.00 /ML	\$60.00	
Fertiliser					
	1 x Urea (fertigation)	0.20 T/ha	\$405 /T	\$81.00	
	1 x Double Super (banded)	0.15 T/ha	\$500 /T	\$75.00	
	2 x ZM (foliar)	7 kg/ha	\$2 /kg	\$24.08	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.88 /L	\$150.24	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter	4.0 L/ha	\$12.25 /L	\$49.00	
	1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
	1 x Pirimicarb	1.75 kg/ha	\$55.00 /kg	\$96.25	
Disease Control					
	1 x Copper Oxychloride	5.3 kg/ha	\$4.00 /kg	\$21.20	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$19.50 /kg	\$48.75	
	4 x Glyphosate	4.0 L/ha	\$6.00 /L	\$96.00	
	2 x Glyphosate (spot spraying)	1.0 L/ha	\$6.00 /L	\$12.00	
Pruning					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,283.33	
	0.3 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$40.95	
	0.5 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$57.75	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
	1.0 x Hand Fruit Thinning	12 min/tree	\$14.00 /hr	\$1,540.00	
Tractor costs					
	4 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$24.56	
	20 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$12.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	2 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$12.00	
	1 x Fertiliser	2.0 hr/ha	\$12.20 /hr	\$24.40	
	5 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$134.10	
	1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	2 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$87.75	
Harvest					
	Contract Mandarin Harvest	25 T/ha	\$225.00 /T	\$5,625.00	
	Cartage	25 T/ha	\$3.50 /T	\$87.50	
	Levies	25 T/ha	\$5.75 /T	\$143.75	
B. Total Variable Costs				\$10,807.22	
Gross Margin per ha (A-B)				\$2,942.78	

Enterprise **MANDARIN - Satsuma**
 Description Drip with under tree herbicide/sod culture
 Location Riverina, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$350	\$400	\$450	\$500	\$550	\$650	\$750	\$800	\$850
10	-\$3,793	-\$3,293	-\$2,793	-\$2,293	-\$1,793	-\$793	\$207	\$707	\$1,207
15	-\$3,215	-\$2,465	-\$1,715	-\$965	-\$215	\$1,285	\$2,785	\$3,535	\$4,285
20	-\$2,636	-\$1,636	-\$636	\$364	\$1,364	\$3,364	\$5,364	\$6,364	\$7,364
25	-\$2,057	-\$807	\$443	\$1,693	\$2,943	\$5,443	\$7,943	\$9,193	\$10,443
30	-\$1,478	\$22	\$1,522	\$3,022	\$4,522	\$7,522	\$10,522	\$12,022	\$13,522
35	-\$900	\$850	\$2,600	\$4,350	\$6,100	\$9,600	\$13,100	\$14,850	\$16,600
40	-\$321	\$1,679	\$3,679	\$5,679	\$7,679	\$11,679	\$15,679	\$17,679	\$19,679

Notes:

Planting Density - 550 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 43.5 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$609 /ha can be deducted from the budget for tractor use labour

Cultural notes: - Citrus irrigation trials at Yanco using soil moisture probes and accurate Irrigation scheduling have shown that water use on drip irrigation could be as low as 4.5 ML/ha. A conservative estimate of 6ML/ha is used in the budget. A well managed drip irrigation system and good management practices could produce higher yields and use less water than those used in the budget. Seek professional advice on the cultural aspects (i.e. yield, water use, variety etc) on the use of drip irrigation in your situation.

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SUNRAYSIA

Enterprise **ORANGES - Valencia**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

				Standard	Your
				Budget	Budget
INCOME:					
	40 T/ha	@	\$160 /T	\$6,400	
A. Total Income/ha				\$6,400	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	9.0 ML/ha	\$38.39 /ML	\$345.51	
	Fixed Levies		\$273.56 /Ha	\$273.56	
	Power	9.0 ML/ha	\$23.00 /ML	\$207.00	
	Maintenance (pump & system)	9.0 ML/ha	\$10.00 /ML	\$90.00	
Fertiliser					
	1 x Urea	0.31 T/ha	\$550 /T	\$170.50	
	1 x Double Super	0.14 T/ha	\$540 /T	\$75.60	
	1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$11.48	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.78 /L	\$142.44	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
Disease Control					
	1 x Copper Oxychloride	5.3 kg/ha	\$3.80 /kg	\$20.14	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$31.50 /kg	\$78.75	
	4 x Glyphosate (spot spraying)	2.0 L/ha	\$4.85 /L	\$38.80	
Pruning					
	0.5 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$68.25	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
Tractor costs					
	6 x Sod mowing	0.8 hr/ha	\$12.28 /hr	\$58.94	
	25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	4 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$24.00	
	2 x Fertiliser	1.5 hr/ha	\$12.20 /hr	\$36.60	
	3 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$80.46	
	2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$70.20	
Harvest					
	Contract Harvest	40 T/ha	\$64.00 /T	\$2,560.00	
	Levies	40 T/ha	\$7.30 /T	\$292.00	
B. Total Variable Costs				\$5,053.11	
Gross Margin per ha (A-B)				\$1,346.89	

Enterprise **ORANGES - Valencia**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$100	\$120	\$140	\$150	\$160	\$175	\$200	\$225	\$250
25	-\$1,484	-\$984	-\$484	-\$234	\$16	\$391	\$1,016	\$1,641	\$2,266
30	-\$1,340	-\$740	-\$140	\$160	\$460	\$910	\$1,660	\$2,410	\$3,160
35	-\$1,197	-\$497	\$203	\$553	\$903	\$1,428	\$2,303	\$3,178	\$4,053
40	-\$1,053	-\$253	\$547	\$947	\$1,347	\$1,947	\$2,947	\$3,947	\$4,947
45	-\$910	-\$10	\$890	\$1,340	\$1,790	\$2,465	\$3,590	\$4,715	\$5,840
50	-\$766	\$234	\$1,234	\$1,734	\$2,234	\$2,984	\$4,234	\$5,484	\$6,734
55	-\$623	\$477	\$1,577	\$2,127	\$2,677	\$3,502	\$4,877	\$6,252	\$7,627

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 49.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$697 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

Note: The fruit price selected in the gross margin is based on a juice contract price

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Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **ORANGES - Early Navel**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

			Standard Budget	Your Budget
INCOME:				
	30 T/ha	@ \$350 /T	\$10,500	
		A. Total Income/ha	\$10,500	
VARIABLE COSTS:				
Irrigation				
Water & Levies	9.0 ML/ha	\$38.39 /ML	\$345.51	
Fixed Levies		\$273.56 /Ha	\$273.56	
Power	9.0 ML/ha	\$23.00 /ML	\$207.00	
Maintenance (pump & system)	9.0 ML/ha	\$10.00 /ML	\$90.00	
Fertiliser				
1 x Urea	0.31 T/ha	\$550 /T	\$170.50	
1 x Double Super	0.14 T/ha	\$540 /T	\$75.60	
1 x Muriate of Potash	0.10 T/ha	\$580 /T	\$58.00	
1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$11.48	
Insect Control				
1 x Oil Spray (1%)	80.0 L/ha	\$1.78 /L	\$142.44	
1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
1 x Chlorpyrifos + Wetter	4.0 L/ha	\$11.75 /L	\$47.00	
1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control				
1 x Copper Oxychloride	5.3 kg/ha	\$3.80 /kg	\$20.14	
Weed Control				
1 x Bromacil/Diuron	2.5 kg/ha	\$31.50 /kg	\$78.75	
4 x Glyphosate (spot spraying)	2.0 L/ha	\$4.85 /L	\$38.80	
Pruning				
1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
0.5 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$68.25	
0.3 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$34.65	
0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management				
1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
0.3 x Hand Fruit Thinning	10 min/tree	\$14.00 /hr	\$364.00	
Tractor costs				
6 x Sod mowing	0.8 hr/ha	\$12.28 /hr	\$58.94	
25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00	
5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
4 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$24.00	
2 x Fertiliser	1.5 hr/ha	\$12.20 /hr	\$36.60	
3 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$80.46	
2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$52.65	
Harvest				
Contract Harvest	30 T/ha	\$64.00 /T	\$1,920.00	
Levies	30 T/ha	\$7.30 /T	\$219.00	
		B. Total Variable Costs	\$6,289.55	
		Gross Margin per ha (A-B)	\$4,210.45	

Enterprise **ORANGES - Early Navel**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$200	\$250	\$300	\$350	\$400	\$450	\$500	\$550	\$600
15	-\$2,220	-\$1,470	-\$720	\$30	\$780	\$1,530	\$2,280	\$3,030	\$3,780
20	-\$1,577	-\$577	\$423	\$1,423	\$2,423	\$3,423	\$4,423	\$5,423	\$6,423
25	-\$933	\$317	\$1,567	\$2,817	\$4,067	\$5,317	\$6,567	\$7,817	\$9,067
30	-\$290	\$1,210	\$2,710	\$4,210	\$5,710	\$7,210	\$8,710	\$10,210	\$11,710
35	\$354	\$2,104	\$3,854	\$5,604	\$7,354	\$9,104	\$10,854	\$12,604	\$14,354
40	\$997	\$2,997	\$4,997	\$6,997	\$8,997	\$10,997	\$12,997	\$14,997	\$16,997
45	\$1,641	\$3,891	\$6,141	\$8,391	\$10,641	\$12,891	\$15,141	\$17,391	\$19,641

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 48.3 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$676 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **ORANGES - Washington Navel**
 Description Microspray, pressurised delivery, sod culture Year: 2003
 Location Sunraysia, NSW, Australia

GROSS MARGIN BUDGET:			1 ha	Standard	Your
				Budget	Budget
INCOME:					
	35 T/ha	@	\$300 /T	\$10,500	
			A. Total Income/ha	\$10,500	
VARIABLE COSTS:					
Irrigation					
	Water & Levies	9.0 ML/ha	\$38.39 /ML	\$345.51	
	Fixed Levies		\$273.56 /Ha	\$273.56	
	Power	9.0 ML/ha	\$23.00 /ML	\$207.00	
	Maintenance (pump & system)	9.0 ML/ha	\$10.00 /ML	\$90.00	
Fertiliser					
	1 x Urea	0.31 T/ha	\$550 /T	\$170.50	
	1 x Double Super	0.14 T/ha	\$540 /T	\$75.60	
	1 x Muriate of Potash	0.10 T/ha	\$580 /T	\$58.00	
	1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$11.48	
Insect Control					
	1 x Oil Spray (1%)	80.0 L/ha	\$1.78 /L	\$142.44	
	1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
	1 x Chlorpyrifos + Wetter	4.0 L/ha	\$11.75 /L	\$47.00	
	1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control					
	1 x Copper Oxychloride	5.3 kg/ha	\$3.80 /kg	\$20.14	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$31.50 /kg	\$78.75	
	4 x Glyphosate (spot spraying)	2.0 L/ha	\$4.85 /L	\$38.80	
Crop Management Sprays					
	2 x G.A. + Wetter (10ppm)	0.20 kg/ha	\$840.00 /kg	\$336.00	
Pruning					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
	0.5 x Hedging (One side)	1.3 hr/ha	\$105 /hr	\$68.25	
	0.3 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$34.65	
	0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management					
	1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
	0.3 x Hand Fruit Thinning	10 min/tree	\$14.00 /hr	\$364.00	
Tractor costs					
	6 x Sod mowing	0.8 hr/ha	\$12.28 /hr	\$58.94	
	25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00	
	5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
	4 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$24.00	
	2 x Fertiliser	1.5 hr/ha	\$12.20 /hr	\$36.60	
	3 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$80.46	
	2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$61.43	
Harvest					
	Contract Harvest	35 T/ha	\$64.00 /T	\$2,240.00	
	Levies	35 T/ha	\$7.30 /T	\$255.50	
			B. Total Variable Costs	\$7,650.15	

Enterprise **ORANGES - Washington Navel**

Description Microspray, pressurised delivery, sod culture

Year: 2003

Location Sunraysia, NSW, Australia

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$100	\$150	\$200	\$250	\$300	\$350	\$400	\$450	\$500
20	-\$4,581	-\$3,581	-\$2,581	-\$1,581	-\$581	\$419	\$1,419	\$2,419	\$3,419
25	-\$4,437	-\$3,187	-\$1,937	-\$687	\$563	\$1,813	\$3,063	\$4,313	\$5,563
30	-\$4,294	-\$2,794	-\$1,294	\$206	\$1,706	\$3,206	\$4,706	\$6,206	\$7,706
35	-\$4,150	-\$2,400	-\$650	\$1,100	\$2,850	\$4,600	\$6,350	\$8,100	\$9,850
40	-\$4,007	-\$2,007	-\$7	\$1,993	\$3,993	\$5,993	\$7,993	\$9,993	\$11,993
45	-\$3,863	-\$1,613	\$637	\$2,887	\$5,137	\$7,387	\$9,637	\$11,887	\$14,137
50	-\$3,720	-\$1,220	\$1,280	\$3,780	\$6,280	\$8,780	\$11,280	\$13,780	\$16,280

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 49.1 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$687 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Enterprise **ORANGES - Late Navel**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

			Standard Budget	Your Budget
INCOME:				
	25 T/ha	@ \$400 /T	\$10,000	
		A. Total Income/ha	\$10,000	
VARIABLE COSTS:				
Irrigation				
Water & Levies	9.0 ML/ha	\$38.39 /ML	\$345.51	
Fixed Levies		\$273.56 /Ha	\$273.56	
Power	9.0 ML/ha	\$23.00 /ML	\$207.00	
Maintenance (pump & system)	9.0 ML/ha	\$10.00 /ML	\$90.00	
Fertiliser				
1 x Urea	0.31 T/ha	\$550 /T	\$170.50	
1 x Double Super	0.14 T/ha	\$540 /T	\$75.60	
1 x Muriate of Potash	0.10 T/ha	\$580 /T	\$58.00	
1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$11.48	
Insect Control				
1 x Oil Spray (1%)	80.0 L/ha	\$1.78 /L	\$142.44	
1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
1 x Chlorpyrifos + Wetter	4.0 L/ha	\$11.75 /L	\$47.00	
1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control				
1 x Copper Oxychloride	5.3 kg/ha	\$3.80 /kg	\$20.14	
Weed Control				
1 x Bromacil/Diuron	2.5 kg/ha	\$31.50 /kg	\$78.75	
4 x Glyphosate (spot spraying)	2.0 L/ha	\$4.85 /L	\$38.80	
Crop Management Sprays				
1 x G.A. + Wetter (10ppm)	0.20 kg/ha	\$840.00 /kg	\$168.00	
1 x Cling Spray	0.4 L/ha	\$7.20 /L	\$2.88	
Pruning				
1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
0.5 x Hedging (One side)	1.3 hr/ha	\$105.00 /hr	\$68.25	
0.3 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$34.65	
0.5 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$52.50	
Crop Management				
1 x Leaf analysis (1 analysis/2ha)	0.5 analysis	\$80.00 /analysis	\$40.00	
0.2 x Hand Fruit Thinning	10 min/tree	\$14.00 /hr	\$242.67	
Tractor costs				
6 x Sod mowing	0.8 hr/ha	\$12.28 /hr	\$58.94	
25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00	
5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
4 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$24.00	
2 x Fertiliser	1.5 hr/ha	\$12.20 /hr	\$36.60	
3 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$80.46	
2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$43.88	
Harvest				
Contract Harvest	25 T/ha	\$64.00 /T	\$1,600.00	
Levies	25 T/ha	\$7.30 /T	\$182.50	
		B. Total Variable Costs	\$5,973.82	
		Gross Margin per ha (A-B)	\$4,026.18	

Enterprise **ORANGES - Late Navel**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$200	\$250	\$300	\$350	\$400	\$450	\$500	\$550	\$600
10	-\$2,904	-\$2,404	-\$1,904	-\$1,404	-\$904	-\$404	\$96	\$596	\$1,096
15	-\$2,261	-\$1,511	-\$761	-\$11	\$739	\$1,489	\$2,239	\$2,989	\$3,739
20	-\$1,617	-\$617	\$383	\$1,383	\$2,383	\$3,383	\$4,383	\$5,383	\$6,383
25	-\$974	\$276	\$1,526	\$2,776	\$4,026	\$5,276	\$6,526	\$7,776	\$9,026
30	-\$330	\$1,170	\$2,670	\$4,170	\$5,670	\$7,170	\$8,670	\$10,170	\$11,670
35	\$313	\$2,063	\$3,813	\$5,563	\$7,313	\$9,063	\$10,813	\$12,563	\$14,313
40	\$957	\$2,957	\$4,957	\$6,957	\$8,957	\$10,957	\$12,957	\$14,957	\$16,957

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 47.6 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$666 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

The management practices or products outlined in the budget does Not imply a recommendation by NSW Agriculture. The management practices and products outlined in the budget are only a guide to costs and are of practices that may currently, or may be anticipated to be used in the field.

Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **MANDARIN - Imperial**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

			Standard Budget	Your Budget
INCOME:				
	30 T/ha	@ \$600 /T	\$18,000	
		A. Total Income/ha	\$18,000	
VARIABLE COSTS:				
Irrigation				
Water & Levies	12.0 ML/ha	\$38.39 /ML	\$460.68	
Fixed Levies		\$273.56 /Ha	\$273.56	
Power	12.0 ML/ha	\$23.00 /ML	\$276.00	
Maintenance (pump & system)	12.0 ML/ha	\$10.00 /ML	\$120.00	
Fertiliser				
1 x Urea	0.31 T/ha	\$550 /T	\$170.50	
1 x Double Super	0.14 T/ha	\$540 /T	\$75.60	
1 x Muriate of Potash	0.10 T/ha	\$580 /T	\$58.00	
1 x Potassium Nitrate	8 kg/ha	\$1 /kg	\$7.68	
1 x ZM (foliar)	7 kg/ha	\$2 /kg	\$11.48	
Insect Control				
1 x Oil Spray (1%)	80.0 L/ha	\$1.78 /L	\$142.44	
1 x Endosulfan	1.0 L/ha	\$12.10 /L	\$12.10	
1 x Bio Control (Aphytis)	0.5 release/ha	\$135.00 /release	\$67.50	
1 x Pest Monitoring	\$1,626 /6.5ha	\$250 /ha	\$250.00	
Disease Control				
1 x Copper Oxychloride	5.3 kg/ha	\$3.80 /kg	\$20.14	
Weed Control				
1 x Bromacil/Diuron	2.5 kg/ha	\$31.50 /kg	\$78.75	
4 x Glyphosate (spot spraying)	2.0 L/ha	\$4.85 /L	\$38.80	
Crop Management Sprays				
1 x G.A. + Wetter (10ppm)	0.20 kg/ha	\$840.00 /kg	\$168.00	
0.5 x Ethephon	2.0 L/ha	\$23.20 /L	\$23.20	
Pruning				
1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$1,213.33	
0.5 x Hedging (one side)	1.3 hr/ha	\$105.00 /hr	\$68.25	
0.5 x Mechanical Topping	1.1 hr/ha	\$105.00 /hr	\$57.75	
0.3 x Mechanical Skirting	1.0 hr/ha	\$105.00 /hr	\$31.50	
Crop Management				
0.3 x Hand Fruit Thinning	12 min/tree	\$14.00 /hr	\$436.80	
1 x Leaf analysis	1.0 analysis	\$80.00 /analysis	\$80.00	
Tractor costs				
6 x Sod mowing	0.8 hr/ha	\$12.28 /hr	\$58.94	
25 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$15.00	
5 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$131.00	
4 x Spot Spray (4W Bike)	2.0 hr/ha	\$3.00 /hr	\$24.00	
3 x Fertiliser	1.5 hr/ha	\$12.20 /hr	\$54.90	
5 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$134.10	
2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18	
1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
1 x Bin Placement	0.15 hr/T Fruit	\$11.70 /hr	\$52.65	
Harvest				
Contract Harvest	30 T/ha	\$225.00 /T	\$6,750.00	
Levies	30 T/ha	\$7.30 /T	\$219.00	
		B. Total Variable Costs	\$11,684.54	
		Gross Margin per ha (A-B)	\$6,315.46	

Enterprise **MANDARIN - Imperial**
 Description Microspray, pressurised delivery, sod culture
 Location Sunraysia, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$350	\$450	\$550	\$600	\$600	\$650	\$750	\$850	\$950
15	-\$2,950	-\$1,450	\$50	\$800	\$800	\$1,550	\$3,050	\$4,550	\$6,050
20	-\$2,362	-\$362	\$1,638	\$2,638	\$2,638	\$3,638	\$5,638	\$7,638	\$9,638
25	-\$1,773	\$727	\$3,227	\$4,477	\$4,477	\$5,727	\$8,227	\$10,727	\$13,227
30	-\$1,185	\$1,815	\$4,815	\$6,315	\$6,315	\$7,815	\$10,815	\$13,815	\$16,815
35	-\$596	\$2,904	\$6,404	\$8,154	\$8,154	\$9,904	\$13,404	\$16,904	\$20,404
40	-\$8	\$3,992	\$7,992	\$9,992	\$9,992	\$11,992	\$15,992	\$19,992	\$23,992
45	\$581	\$5,081	\$9,581	\$11,831	\$11,831	\$14,081	\$18,581	\$23,081	\$27,581

Notes:

Planting Density - 520 trees/ha

Tree age: - 10 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 53.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$753 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Always check chemical labels for up to date rates, alternative products may have different rates

CENTRAL COAST

Enterprise **ORANGES - Valencia**
 Description Microjet (supplementary irrigation), sod culture
 Location Central Coast, NSW, Australia

Year: 2003

GROSS MARGIN BUDGET:

1 ha

INCOME:

30 t/ha @ \$150 /T
A. Total Income/ha

Standard Budget	Your Budget
\$4,500	
\$4,500	

VARIABLE COSTS:

Irrigation

Power	0.5 ML/ha	\$13.00 /ML	\$6.50
Maintenance (pump & system)	0.5 ML/ha	\$10.00 /ML	\$5.00

Fertiliser

1 x Lime	0.50 T/ha	\$180 /T	\$90.00
1 x Double Super	0.40 T/ha	\$530 /T	\$212.00
2 x Ammonium Nitrate	0.60 T/ha	\$580 /T	\$696.00
1 x Muriate of Potash	0.04 T/ha	\$525 /T	\$21.00
1 x Zinc Sulphate	2.25 kg/ha	\$1.24 /kg	\$2.79
1 x Manganese Sulphate	1.5 kg/ha	\$1.24 /kg	\$1.86

Insect Control

1 x Oil Spray (1%)	50.0 L/ha	\$2.44 /L	\$121.95
1 x Maldison	12.5 L/ha	\$8.75 /L	\$109.38
1 x Maldison Bait Spray	0.75 L/ha	\$8.75 /L	\$6.56
1 x Yeast autolysate Bait Spray	1.2 L/ha	\$10.00 /L	\$12.00

Disease Control

1 x Copper Oxychloride	5.3 kg/ha	\$3.68 /kg	\$19.50
1 x Zineb	10.0 kg/ha	\$24.00 /kg	\$240.00
1 x Benomyl	5.0 kg/ha	\$55.00 /kg	\$275.00

Weed Control

1 x Diuron	0.5 L/ha	\$8.00 /L	\$4.00
2 x Glyphosate (spot spraying)	0.9 L/ha	\$6.75 /L	\$12.15

Pruning

1 x Hand Pruning	5 min/tree	\$14.00 /hr	\$1,050.00
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Tractor costs

4 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$24.56
4 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$2.40
1 x Strip Herbicide	2.0 hr/ha	\$13.10 /hr	\$26.20
2 x Spot Spray	2.0 hr/ha	\$11.70 /hr	\$46.80
5 x Fertiliser	1.0 hr/ha	\$12.20 /hr	\$61.00
3 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$80.46
2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$90.18

Harvest

Picking (strip)	15 min/tree	\$14.50 /hr	\$1,812.50
Cartage	30 t/ha	\$4.00 /T	\$120.00
Levies	30 t/ha	\$3.25 /T	\$97.50

B. Total Variable Costs **\$5,271.69**

Gross Margin per ha (A-B) **-\$771.69**

Enterprise **ORANGES - Valencia**
 Description Microjet (supplimentary irrigation), sod culture
 Location Central Coast, NSW, Australia

Year: 2003

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$50	\$75	\$100	\$125	\$150	\$175	\$200	\$225	\$250
15	-\$3,507	-\$3,132	-\$2,757	-\$2,382	-\$2,007	-\$1,632	-\$1,257	-\$882	-\$507
20	-\$3,595	-\$3,095	-\$2,595	-\$2,095	-\$1,595	-\$1,095	-\$595	-\$95	\$405
25	-\$3,683	-\$3,058	-\$2,433	-\$1,808	-\$1,183	-\$558	\$67	\$692	\$1,317
30	-\$3,772	-\$3,022	-\$2,272	-\$1,522	-\$772	-\$22	\$728	\$1,478	\$2,228
35	-\$3,860	-\$2,985	-\$2,110	-\$1,235	-\$360	\$515	\$1,390	\$2,265	\$3,140
40	-\$3,948	-\$2,948	-\$1,948	-\$948	\$52	\$1,052	\$2,052	\$3,052	\$4,052
45	-\$4,037	-\$2,912	-\$1,787	-\$662	\$463	\$1,588	\$2,713	\$3,838	\$4,963

Notes:

Planting Density - 500 trees/ha (6m x 3m spacing)

Tree age: - 12 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 27.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$389 /ha can be deducted from the budget for tractor use labour

Picking: - Harvest costs in the sensitivity analysis are assumed to be linearly relative to the yield

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

The management practices or products outlined in the budget does Not imply a recommendation by NSW Agriculture. The management practices and products outlined in the budget are only a guide to costs and are of practices that may currently, or may be anticipated to be used in the field.

Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **ORANGES - Washington Navel**
 Description Microjet (supplimentary irrigation), sod culture Year: 2003
 Location Central Coast, NSW, Australia

GROSS MARGIN BUDGET:				1 ha	Standard Budget	Your Budget
INCOME:						
	30 t/ha	@	\$250 /T		\$7,500	
				A. Total Income/ha	\$7,500	
VARIABLE COSTS:						
Irrigation						
	Power	0.5 ML/ha	\$13.00 /ML		\$6.50	
	Maintenance (pump & system)	0.5 ML/ha	\$10.00 /ML		\$5.00	
Fertiliser						
	1 x Lime	0.51 T/ha	\$180 /T		\$91.80	
	1 x Single Super	0.74 T/ha	\$356 /T		\$263.44	
	2 x Ammonium Nitrate	0.60 T/ha	\$580 /T		\$696.00	
	1 x Muriate of Potash	0.04 T/ha	\$525 /T		\$21.00	
	1 x Zinc Sulphate	2.25 kg/ha	\$1 /kg		\$2.79	
	1 x Manganese Sulphate	1.5 kg/ha	\$1 /kg		\$1.86	
Insect Control						
	1 x Oil Spray (1%)	50.0 L/ha	\$2.44 /L		\$121.95	
	1 x Maldison	12.5 L/ha	\$8.75 /L		\$109.38	
	1 x Maldison	0.75 L/ha	\$8.75 /L		\$6.56	
	1 x Yeast autolysate	1.2 L/ha	\$10.00 /L		\$12.00	
Disease Control						
	1 x Copper Oxychloride	5.3 kg/ha	\$3.68 /kg		\$19.50	
	1 x Zineb	10.0 kg/ha	\$24.00 /kg		\$240.00	
Weed Control						
	1 x Diuron	0.5 L/ha	\$8.00 /L		\$4.00	
	2 x Glyphosate (spot spraying)	0.9 L/ha	\$6.75 /L		\$12.15	
Crop Management Sprays						
	1 x G.A. + Wetter	0.20 kg/ha	\$760.00 /kg		\$152.00	
	1 x Cling Spray	1.0 L/ha	\$9.60 /L		\$9.60	
Crop Management						
	1 x Hand Pruning	5 min/tree	\$14.00 /hr		\$840.00	
Tractor costs						
	4 x Sod mowing	0.5 hr/ha	\$12.28 /hr		\$24.56	
	4 x Check Emitters	0.2 hr/ha	\$3.00 /hr		\$2.40	
	1 x Herbicide	2.0 hr/ha	\$13.10 /hr		\$26.20	
	2 x Spot Spray	2.0 hr/ha	\$11.70 /hr		\$46.80	
	5 x Fertiliser	1.0 hr/ha	\$12.20 /hr		\$61.00	
	7 x Air blast Spray	2.0 hr/ha	\$13.41 /hr		\$187.74	
	2 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr		\$90.18	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr		\$12.70	
	1 x Bait spray	1.0 hr/ha	\$11.70 /hr		\$11.70	
Harvest						
	Picking (strip)	15 min/tree	\$14.50 /hr		\$2,610.00	
	Cartage	30 t/ha	\$4.00 /T		\$120.00	
	Levies	30 t/ha	\$3.25 /T		\$97.50	
				B. Total Variable Costs	\$5,906.31	
				Gross Margin per ha (A-B)	\$1,593.69	

Enterprise **ORANGES - Washington Navel**

Description Microjet (supplimentary irrigation), sod culture

Year: 2003

Location Central Coast, NSW, Australia

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$150	\$175	\$200	\$225	\$250	\$300	\$350	\$400	\$450
15	-\$2,243	-\$1,868	-\$1,493	-\$1,118	-\$743	\$7	\$757	\$1,507	\$2,257
20	-\$1,964	-\$1,464	-\$964	-\$464	\$36	\$1,036	\$2,036	\$3,036	\$4,036
25	-\$1,685	-\$1,060	-\$435	\$190	\$815	\$2,065	\$3,315	\$4,565	\$5,815
30	-\$1,406	-\$656	\$94	\$844	\$1,594	\$3,094	\$4,594	\$6,094	\$7,594
35	-\$1,128	-\$253	\$622	\$1,497	\$2,372	\$4,122	\$5,872	\$7,622	\$9,372
40	-\$849	\$151	\$1,151	\$2,151	\$3,151	\$5,151	\$7,151	\$9,151	\$11,151
45	-\$570	\$555	\$1,680	\$2,805	\$3,930	\$6,180	\$8,430	\$10,680	\$12,930

Notes:

Planting Density - 720 trees/ha (5.5m x 2.5m spacing)

Tree age: - 12 years

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 35.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$501 /ha can be deducted from the budget for tractor use labour

Picking: - Harvest costs in the sensitivity analysis are assumed to be linearly relative to the yield

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Enterprise **LEMONS - (Standard Density Planting)**
 Description Microjet (supplimentary irrigation), sod culture Year: 2003
 Location Central Coast, NSW, Australia

GROSS MARGIN BUDGET:				1 ha	
				Standard Budget	Your Budget
INCOME:					
	25 t/ha	@	\$200 /T	\$5,000	
A. Total Income/ha				\$5,000	
VARIABLE COSTS:					
Irrigation					
	Power	0.5 ML/ha	\$13.00 /ML	\$6.50	
	Maintenance (pump & system)	0.5 ML/ha	\$10.00 /ML	\$5.00	
Fertiliser					
	3 x Urea	0.12 T/ha	\$585 /T	\$210.60	
	1 x Triple Super	0.16 T/ha	\$520 /T	\$83.20	
	1 x Muriate of Potash	0.04 T/ha	\$525 /T	\$21.00	
Insect Control					
	1 x Oil Spray (1%)	20.0 L/ha	\$2.44 /L	\$48.78	
	1 x Maldison	3.8 L/ha	\$8.75 /L	\$32.81	
	1 x Maldison Bait Spray	0.75 L/ha	\$8.75 /L	\$6.56	
	1 x Yeast autolysate Bait Spray	1.2 L/ha	\$10.00 /L	\$12.00	
Disease Control					
	3 x Cuprous Oxide	2.25 kg/ha	\$7.00 /kg	\$47.25	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$39.00 /kg	\$97.50	
	2 x Glyphosate (spot spraying)	2.5 L/ha	\$6.75 /L	\$33.75	
Crop Management					
	1 x Hand Pruning	10 min/tree	\$14.00 /hr	\$816.67	
Tractor costs					
	6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84	
	4 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$2.40	
	1 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$26.20	
	2 x Spot Spray	2.0 hr/ha	\$11.70 /hr	\$46.80	
	5 x Fertiliser	1.0 hr/ha	\$12.20 /hr	\$61.00	
	4 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$107.28	
	1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bait spray	1.0 hr/ha	\$11.70 /hr	\$11.70	
Harvest					
	Picking (multiple selective)	20 min/tree	\$14.50 /hr	\$1,691.67	
	Cartage	25 t/ha	\$4.00 /T	\$100.00	
	Levies	25 t/ha	\$3.25 /T	\$81.25	
B. Total Variable Costs				\$3,644.55	
Gross Margin per ha (A-B)				\$1,355.45	

Enterprise **LEMONS - (Standard Density Planting)**
 Description Microjet (supplimentary irrigation), sod culture Year: 2003
 Location Central Coast, NSW, Australia

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$100	\$125	\$150	\$175	\$200	\$250	\$300	\$350	\$400
10	-\$1,521	-\$1,271	-\$1,021	-\$771	-\$521	-\$21	\$479	\$979	\$1,479
15	-\$1,395	-\$1,020	-\$645	-\$270	\$105	\$855	\$1,605	\$2,355	\$3,105
20	-\$1,270	-\$770	-\$270	\$230	\$730	\$1,730	\$2,730	\$3,730	\$4,730
25	-\$1,145	-\$520	\$105	\$730	\$1,355	\$2,605	\$3,855	\$5,105	\$6,355
30	-\$1,019	-\$269	\$481	\$1,231	\$1,981	\$3,481	\$4,981	\$6,481	\$7,981
35	-\$894	-\$19	\$856	\$1,731	\$2,606	\$4,356	\$6,106	\$7,856	\$9,606
40	-\$768	\$232	\$1,232	\$2,232	\$3,232	\$5,232	\$7,232	\$9,232	\$11,232

Notes:

Planting Density - 350 trees/ha (6m x 4.5m spacing)

Tree age: - 5 years

Picking: - Up to 5 separate harvests per year - selective picking of mature fruit
 - Harvest costs in the sensitivity analysis are assumed to be linearly relative to the yield

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 27.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$389 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Always check chemical labels for up to date rates, alternative products may have different rates

Enterprise **LEMONS - (Double Density Planting)**
 Description Microjet (supplimentary irrigation), sod culture Year: 2003
 Location Central Coast, NSW, Australia

GROSS MARGIN BUDGET:			1 ha	Standard Budget	Your Budget
INCOME:					
	52 T/ha	@	\$200 /T	\$10,400	
A. Total Income/ha				\$10,400	
VARIABLE COSTS:					
Irrigation					
	Power	0.5 ML/ha	\$13.00 /ML	\$6.50	
	Maintenance (pump & system)	0.5 ML/ha	\$10.00 /ML	\$5.00	
Fertiliser					
	0.5 x Lime	1.20 T/ha	\$180 /T	\$108.00	
	3 x Ammonium Nitrate	0.23 T/ha	\$580 /T	\$391.50	
	2 x Muriate of Potash	0.08 T/ha	\$525 /T	\$84.00	
	1 x Magnesium Sulphate	35.0 kg/ha	\$0.68 /kg	\$23.80	
Insect Control					
	1 x Oil Spray (1%)	40.0 L/ha	\$2.44 /L	\$97.56	
	1 x Maldison Bait Spray	1.90 L/ha	\$8.75 /L	\$16.63	
	1 x Yeast autolysate Bait Spray	3.0 L/ha	\$10.00 /L	\$30.00	
Disease Control					
	6 x Copper Hydroxide	8.8 kg/ha	\$8.00 /kg	\$422.40	
	4 x Zineb	1.5 kg/ha	\$24.00 /kg	\$144.00	
Weed Control					
	1 x Bromacil/Diuron	2.5 kg/ha	\$39.00 /kg	\$97.50	
	4 x Glyphosate (spot spraying)	2.5 L/ha	\$6.75 /L	\$67.50	
Crop Management					
	1 x Hand Pruning	8 min/tree	\$14.00 /hr	\$1,344.00	
Tractor costs					
	6 x Sod mowing	0.5 hr/ha	\$12.28 /hr	\$36.84	
	4 x Check Emitters	0.2 hr/ha	\$3.00 /hr	\$2.40	
	1 x Herbicide	2.0 hr/ha	\$13.10 /hr	\$26.20	
	4 x Spot Spray	2.0 hr/ha	\$11.70 /hr	\$93.60	
	5 x Fertiliser	1.0 hr/ha	\$12.20 /hr	\$61.00	
	12 x Air blast Spray	2.0 hr/ha	\$13.41 /hr	\$321.84	
	1 x Oscillating boom Spray	3.0 hr/ha	\$15.03 /hr	\$45.09	
	1 x Mulch Prunings	1.0 hr/ha	\$12.70 /hr	\$12.70	
	1 x Bait spray	1.0 hr/ha	\$11.70 /hr	\$11.70	
Harvest					
	Picking (multiple selective)	15 min/tree	\$14.50 /hr	\$2,610.00	
	Cartage	52 T/ha	\$4.00 /T	\$208.00	
	Levies	52 T/ha	\$3.25 /T	\$169.00	
B. Total Variable Costs				\$6,436.76	
Gross Margin per ha (A-B)				\$3,963.24	

Enterprise **LEMONS - (Double Density Planting)**
 Description Microjet (supplimentary irrigation), sod culture Year: 2003
 Location Central Coast, NSW, Australia

SENSITIVITY ANALYSIS

TABLE 1- Effect of Yield and Price on Gross Margin /ha

YIELD (t)	ON FARM PRICE (\$/t)								
	\$100	\$125	\$150	\$175	\$200	\$250	\$300	\$350	\$400
37	-\$1,875	-\$950	-\$25	\$900	\$1,825	\$3,675	\$5,525	\$7,375	\$9,225
42	-\$1,662	-\$612	\$438	\$1,488	\$2,538	\$4,638	\$6,738	\$8,838	\$10,938
47	-\$1,450	-\$275	\$900	\$2,075	\$3,250	\$5,600	\$7,950	\$10,300	\$12,650
52	-\$1,237	\$63	\$1,363	\$2,663	\$3,963	\$6,563	\$9,163	\$11,763	\$14,363
57	-\$1,024	\$401	\$1,826	\$3,251	\$4,676	\$7,526	\$10,376	\$13,226	\$16,076
62	-\$811	\$739	\$2,289	\$3,839	\$5,389	\$8,489	\$11,589	\$14,689	\$17,789
67	-\$598	\$1,077	\$2,752	\$4,427	\$6,102	\$9,452	\$12,802	\$16,152	\$19,502

Notes:

Planting Density - 720 trees/ha (5.5m x 2.5m spacing)

Tree age: - 5 years

Picking Fruit: - Up to 8 separate harvests per year - selective picking of mature fruit. Fruit is clipped for premium quality fruit
 - Harvest costs in the sensitivity analysis are assumed to be linearly relative to the yield

Machinery: - Machinery costs include variable costs only for the tractor and implements

Labour: - The labour requirement for tractor use is 47.8 hrs/ha
 - Using a labour cost of \$14 /hr an additional \$669 /ha can be deducted from the budget for tractor use labour

Economic notes - These costs are only a guide. They do not include overhead costs. Use your own figures to estimate your own establishment costs. **All costs/prices do not include GST**

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Always check chemical labels for up to date rates, alternative products may have different rates

DEVELOPMENT BUDGETS

DEVELOPMENT BUDGETS

The following assumptions and comments are for all of the development budgets (i.e. Navels, mid season oranges etc) unless stated otherwise.

Development refers to investing capital in a farm to increase its profitability and value.

Development budgets are used primarily as an evaluation guide of an investment. The budgets do not incorporate taxation into the cash flows. Development budgeting is a technique used to show future costs and returns associated with a development program. They are the basis for deciding whether or not to undertake a project, for obtaining finance and for monitoring its performance once it commences. Professional financial advice should be obtained to make the budgets more meaningful to your specific financial circumstances (i.e. taxation, whole farm cash flow, etc)

Cash flows used in development budgeting demonstrate the difference between total income and total costs. The surplus or debt in the tables represents a cumulative total of the difference between income and costs in a year and the surplus or debt of the previous year. The developmental budgets use gross margins to develop budget projections.

The following budgets are only a guide and have tried to represent a conservative average situation. This conservative average situation is a good indication of prospective costs and return, but are not suitable to represent a specific proposed development that you might be considering. Variables, such as yield and prices, can have a dramatic effect on the budgets. To assist in demonstrating the effect of changes of variable inputs on returns, numerous sensitivity graphs have been presented. Although these graphs help to demonstrate the sensitivity of some of the variable inputs on returns, the best method to assess your own situation is to conduct your own budget. A copy of the budgets in Excel format is available from the NSW Agriculture Farm Business & Trade Web site and the ACG "Factsheet" web page (See page 1, Budget Updates for more details). The excel spreadsheets available from the web are only a guide as they do not include a detailed analysis of overhead costs, fixed costs and taxation considerations. The spreadsheets from the web are also limited to their design constraints. You will need to have a copy of Microsoft Excel (version 97 or later) on your computer to run the spreadsheets. An explanation document of how to use the spreadsheets is provided.

The developmental budgets provided include:

- Washington Navels
- Imperial Mandarins
- Mid Season Oranges
- High density Navels (790 trees/ha and 1010trees/ha)
- Reworking Navels

Basic Assumptions

Labour provided by the grower is not budgeted in the analysis. Examples of labour provided by the grower that is not budgeted in the analysis are; conducting irrigations, spraying, cultivations, mulching of small sized pruning, organising pickers, miscellaneous repairs (i.e.

machinery, fences, irrigation lines and heads etc) and bookkeeping. However where an operation would warrant outside use of labour or assistance (i.e. pruning, mulching, hedging etc), labour and/or contracting has been included in the budgets.

Each budget is presented in the form of tables and sensitivity graphs. There are two sets of tables. The first set is a 20 year financial summary for each enterprise. The second set of tables shows the individual year variable cost budgets which formulate the 20 year summary tables. Variable cost budgets have not been developed for every year, instead they have been grouped into major stages. The individual variable cost budgets presented are years 0 (planting), 1-3 (early growth), 4-6 (early bearing), 7-9 (pre maturity) and 10-20 (maturity). The costs have been grouped into years because the variable costs within these years do not change dramatically and it makes the budgets easier to use. Note that yield and water use are not included in the individual year variable cost budgets, but are included in the 20 year summary budgets. Yield and water use can change quickly in the early years and therefore must be budgeted on an individual year basis.

Some of the numbers presented in the budgets have been presented in a rounded form to two decimal places (i.e. 0.15). Although it may be presented in two decimal places, it may actually be an extended decimal place (i.e. 0.1544). If manually calculating an equation that uses a rounded two decimal number, but is actually an extended decimal number, may give a different result.

Sensitivity graphs are presented to demonstrate the sensitivity of the costs, income and loan repayment variables on returns. The graphs clearly demonstrate that slight changes in price, yield or finance can have a dramatic effect on the profitability of an enterprise. Since a slight change in variable inputs can significantly affect returns, it is difficult to assume that the budgets presented in this booklet are suitable for your circumstances. The budgets presented in this booklet are only a guide. To enable you to develop your own budgets a copy of the budget spreadsheets in an Excel format (Version 97 or later) are available from the NSW Agriculture Farm Business & Trade Web site.

Yield, prices and variable inputs used in the budgets are derived from a combination of current practices and best practice. The prices and yields used in the budgets are considered conservative at the time of publication. **Conduct your own investigations on yields, prices and variables inputs in your district and your individual management practices to obtain a more realistic budget projection.** Growers should contact agricultural consultants and accountants for specific information on cultural practices, how these investments will affect their individual financial position and the implications such investments have for taxation purposes.

Number of Applications

The first column of the yearly group variable cost budget sheets is the number of applications. This nominates how many times a practice has been conducted within the year. For example, a “1x” application for “GA Spray” means that GA was sprayed once within the year. If the number of applications is a decimal number, this means that the trees are hedged once every three years. An application number of “0.5” means once every two years. Although a decimal number indicates that a practice is conducted on alternate years, the cost is spread equally throughout the years. For example, if the total cost of a hedging exercise is

\$150, and it is conducted once every three years (0.3x), the budget assumes that a cost of $(\$150 \div 3)$ \$50 will be incurred every year.

Land Preparation & Planting

Year 0 is designated as land preparation. In year 0 old trees are removed, the land is spelled and prepared for planting in the next year. Planting is assumed to be conducted with the aid of a mechanical hole digging machine. Planting by manual labour only would at least be double the cost of mechanical aid planting.

The irrigation system only includes pipes and sprinklers on the block. It does not include the pump, pump shed and piping to the block. The irrigation is assumed to be installed at the end of year 0.

Irrigation

Irrigation prices are based on Riverina and Sunraysia water prices (appendix 1). A \$10/ML irrigation maintenance and pump maintenance charge is included. The drip irrigation system used for the Riverina budgets assumes that water is available upon demand and no on farm storage is required. Checking emitters in the tractor costs section is for checking sprinklers or drip irrigation lines for blockages or breakages for each irrigation using a four wheel bike. The cost of an irrigation pump and pump shed is not included.

Fertiliser Application

The application of the base nutrients of nitrogen, phosphorus and potassium are assumed to be delivered by urea, double super and muriate of potash (potassium chloride). These three fertilisers are presented as the total amount of fertiliser required for the whole year. The number applications quoted in the first column do not affect this annual rate. However, all other fertiliser and foliar nutrients presented are on an amount per application basis. For example, if a 2T/ha application of urea has an application number of “3x”, this does not mean that the fertiliser is applied three times per year at a rate of 2T/ha on each application. This means, the urea is applied three times per year at an application of $(2T \div 3)$ 0.65T/ha for each time it is applied and the total amount of urea applied per year is 2T/ha.

For fertilisers other than Urea, Super or Potash, the application rate per hectare is presented at a rate per application. For example, if “Citrus Mix 12:3:3” is applied four times per year (4x) at a rate of 0.8T/ha on each application of 0.8T/ha is applied, then the total amount of “Citrus Mix 12:3:3” used per year is $(0.8T \times 4)$ 3.2T/ha.

Very young trees, up to 3 years of age, are normally hand fertilised up to six times per year. However, to simplify the calculations, tractor fertiliser application is assumed. The tractor fertiliser application costs will partially cover the cost of extra labour for this practice.

Spraying

Oil sprays and GA spray on mature trees are assumed to be conducted with an oscillating boom at 8000 L/ha water volume rate. GA is sprayed at a 10 ppm rate. However leaf miner oil sprays on young trees are assumed to be conducted with an airblast sprayer at 2800L/ha water volume rate. All other sprays on mature trees are assumed to be conducted with an airblast sprayer at 3500 L/ha water volume rate. Water volume rates for spraying on younger trees are reduced.

Tractor Implements

The type of implement and associated costs used in the budget for the tractor usage are as follows:

Sod Mowing = tractor mounted slasher

Check Emitters = 4 wheel bike

Herbicide rows = herbicide spraying with tractor mounted tank and boom

Spot Spray = herbicide spot spraying with a four wheel bike and mounted tank and gun

Ground Fertilise = ground application of fertiliser with a tractor mounted fertiliser spreader

OB Spray = oscillating boom spraying

Air blast Spray = air blast spraying

Mulch Prunings = hammer type mulcher

Urea is assumed to be fertigated. The operating costs of the tractor and implements are outlined in appendix 2 and 3.

Bin placement is the placement of empty bins into the orchard prior to harvest and the removal of full bins from the orchard.

Harvesting

Contract Harvesting is assumed to include the base \$/bin rate plus other government levies. The Mid Season variety budgets are assumed to be mechanically harvested. The Levies comprise of the Horticulture Australia levy and the appropriate district levies.

Overhead and Fixed Costs

Overhead and Fixed Costs include such costs as shire rates, telephone, insurance, vehicle registration, accountancy and bank charges. It does not include capital costs such as the purchase of the land, farm machinery, shed, tools or any other kind of capital costs. The overhead and fixed costs figure is based on the average overhead and fixed costs figure derived from 2002 Citrus Benchmarking Results (MVCMB, Sunraysia).

Finance

The budgets are presented with and without finance. Financing assumes that all of the money that is used in the budget is borrowed. Finance repayments are only made until the enterprise generates income. All of the surplus income is put back into repayment of the loan (i.e. all of the money used to repay the loan is not taxed). The cumulative cash flow (After Finance) includes the loan repayments. The tables and graphs also present scenarios without finance.

Harvest occurs at the end of each financial year and therefore income is assumed to be generated at the end of each financial year. Some cultural practices occur evenly throughout the year, whilst other cultural practices may occur at the beginning or towards the end of the year. Practices that would occur at the beginning of the year would have a higher interest cost than those practices occurring at the end of the year. For example a pruning exercise conducted at the beginning of the financial year would incur 12 months of interest, whilst a fungicide spray applied only 4 months before the end of the financial year would incur 4 months of interest. To accommodate the differences of the timing of cultural practices in relation to the amount of interest they would incur, the budget has assumed that particular groups of cultural practices would incur interest at different amounts. The cultural practices that are assumed to occur evenly throughout the year are; irrigation, herbicide, fertilisers, insecticides, crop management and tractor use. Pruning would occur in the 1st month of the

year. Crop management sprays would occur in the 4th month of the year. Fungicides would occur in the 8th month of the year. Harvesting would occur in the 12th month of the year.

The budgets assume a 0% inflation rate for ease of interpretation and to standardise net present value calculations.

The purchase and installation of irrigation lines is assumed to be in the 9th month of year 0 and thus would incur finance interest for 2 months of the year.

Net Present Value (NPV)

Also important to cash flow analysis are Net Present Values (NPV's). NPV's are the sum of the discounted values of future income and costs associated with a farm project or plan. Projects with a positive NPV value provide a net gain and are desirable. Those with the highest NPV rank as the most desirable. NSW Government guidelines for discounting recommends a rate of 7 percent per year in undertaking economic evaluation of proposals. This is a real rate. It presumes that all future costs and benefits will be measured in relation to the current purchasing power of money (ie. That the effect of inflation on future costs and benefits will be ignored). NPV is calculated on non financed (no fin.) budgets. Please note that inflation should be at 0% when conducting a NPV analysis.

Net Present Value is a very important tool when trying to compare different enterprises that produce income and costs in different time frames. For example, if you were offered \$1000 now or \$2000 in 10 years time with an assumption that you could invest your \$1000 at 7% interest over 10 year and with no inflation, which would you choose? One method is to increase the value of the \$1000 by 7% over the next 10 years as if it was invested in a bank account that provided 7% interest. If \$1000 was increased for 7% over the next 10 year, it would be equal to \$1967. On a pure economic basis, you would decide to take the \$2000 in 10 years time. NPV is a similar calculation except it works in reverse, instead of increasing the value of the \$1000, it reduces the value of the \$2000 at a 7% rate. If \$2000 was discounted at 7% over 10 years it would be \$1087. In other words if you invested \$1087 for 10 years at 7% interest it would be worth \$2000. The NPV of the \$2000 in 10 years time is worth now \$1087, which is more than the \$1000 offer. Although two enterprises may provide the same amount cumulated cash over 20 years, the NPV value can provide a better indication of the actual value of the enterprise in "today" terms. An enterprise that produces a balanced income spread evenly over the years will have a higher NPV than an enterprise that provides the same amount of income but in the later years.

The NPV in the budgets are calculated on the annual cash flows (income – costs). The NPV is derived from discounting the cash surplus/deficit each year, then adding all of the NPV's values for each year together.

Development Budget – Navel – Standard Density

Enterprise (per Ha): Washington Navels

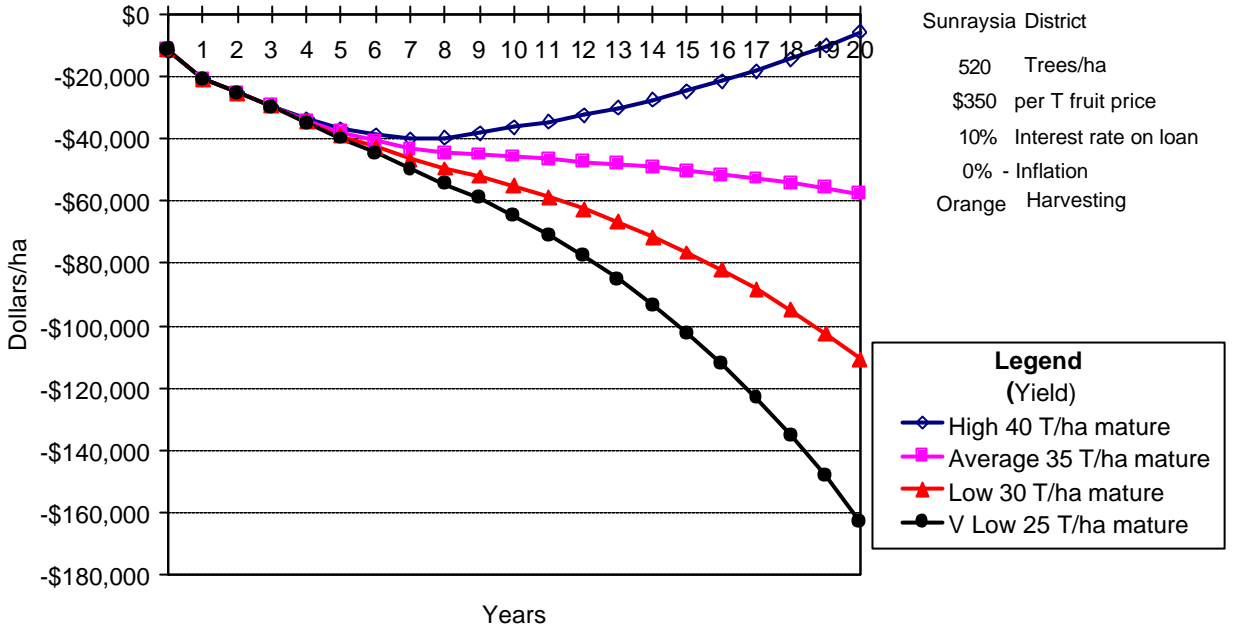
Description: Sod culture, undertree sprinkler
 Location: Sunraysia
 Tree density: 520 trees/ha
 Unit size: 1 Hectare

7% NPV (no fin.) = \$880
 Inflation = 0%
 Harvest (Mandarin, Orange or Machine) = Orange

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use MI/ha	0	4	5	6	6	7	7	8	9	10	10	10	10
Income													
Yield T/ha	0	0	0	2.0	6.0	11.0	16.0	22.0	28.0	32.0	35.0	35.0	35.0
Fruit Prices \$/T	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Total Enterprise Income	\$0	\$0	\$0	\$700	\$2,100	\$3,850	\$5,600	\$7,700	\$9,800	\$11,200	\$12,250	\$12,250	\$12,250
Irrigation													
Herbicide	\$0	\$58											
Fertiliser	\$0	\$89	\$89	\$89	\$265	\$265	\$265	\$284	\$284	\$284	\$318	\$318	\$318
Fungicides		\$0	\$0	\$0	\$15	\$15	\$15	\$19	\$19	\$19	\$20	\$20	\$20
Insecticides		\$50	\$50	\$50	\$189	\$189	\$189	\$257	\$257	\$257	\$324	\$324	\$324
Crop Management Sprays		\$0	\$0	\$0	\$0	\$0	\$0	\$168	\$168	\$168	\$339	\$339	\$339
Pruning		\$61	\$61	\$61	\$243	\$243	\$243	\$781	\$781	\$781	\$1,099	\$1,099	\$1,099
Crop Management		\$0	\$0	\$0	\$290	\$290	\$290	\$290	\$290	\$290	\$593	\$593	\$593
Tractor		\$338	\$338	\$362	\$396	\$455	\$513	\$601	\$672	\$718	\$825	\$825	\$825
Contract Harvesting		\$0	\$0	\$128	\$384	\$704	\$1,024	\$1,408	\$1,792	\$2,048	\$2,240	\$2,240	\$2,240
Levies		\$0	\$0	\$15	\$44	\$80	\$117	\$161	\$204	\$234	\$256	\$256	\$256
Overhead & Fixed costs		\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917
Other Costs per ha no inflation		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Costs converted per unit size & infl:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ANNUAL CASH SURPLUS/DEFICIT	-\$10,846	-\$7,628	-\$2,177	-\$1,681	-\$1,462	-\$199	\$1,136	\$1,852	\$3,383	\$4,380	\$4,214	\$4,214	\$4,214
ANNUAL CASH SURPLUS/DEFICIT	-10846.02	-7628.242	-2176.632	-1681.462	-1462.287	-198.6768	1136.3232	1852.3689	3382.9789	4379.5889	4213.5589	4213.5589	4213.5589
CUMULATIVE CASH FLOW (NO FINANCE)	-10846.02	-18474.26	-20650.89	-22332.36	-23794.64	-23993.32	-22857	-21004.63	-17621.65	-13242.06	-9028.502	-4814.943	-601.3839
Loan interest rate	10%												
Interest charge	-506.8937	-1811.383	-2208.752	-2652.109	-3147.417	-3618.935	-4007.08	-4378.643	-4643.095	-4778.377	-4894.586	-4962.689	-5037.602
CUMULATIVE CASH FLOW (After FINANCE)	-11352.91	-20792.54	-25177.92	-29511.49	-34121.2	-37938.81	-40809.57	-43335.84	-44595.96	-44994.75	-45675.77	-46424.9	-47248.95

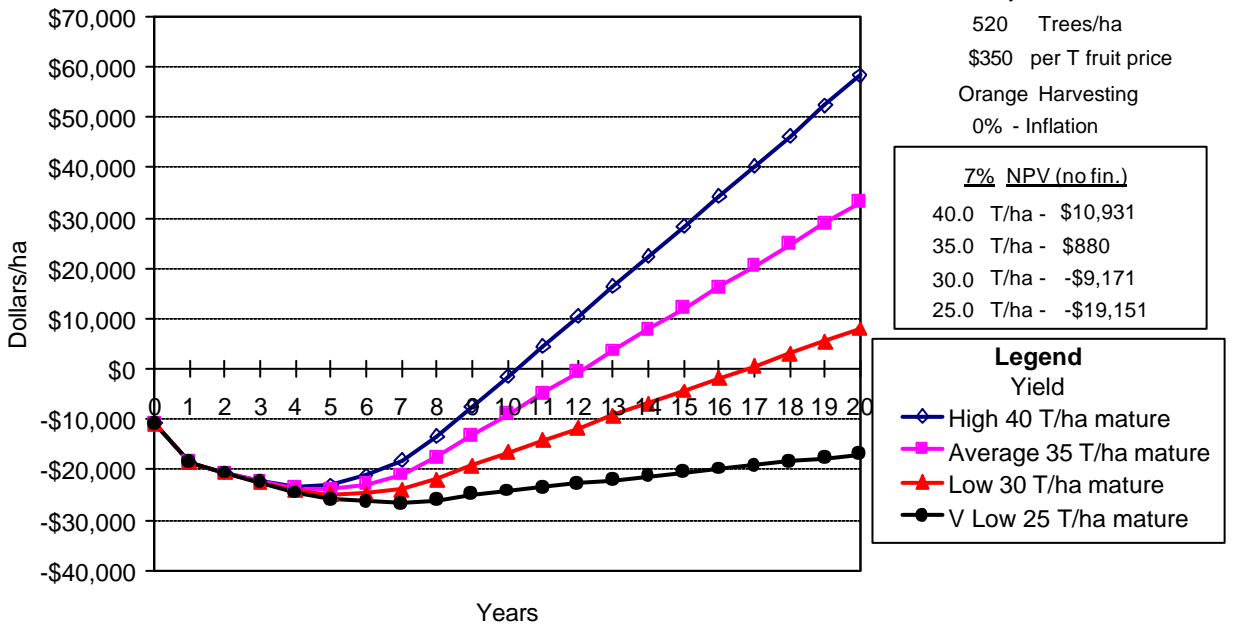
Washington Navels Cumulative Cash Flow / ha

Yield Sensitivity Graph - With Finance



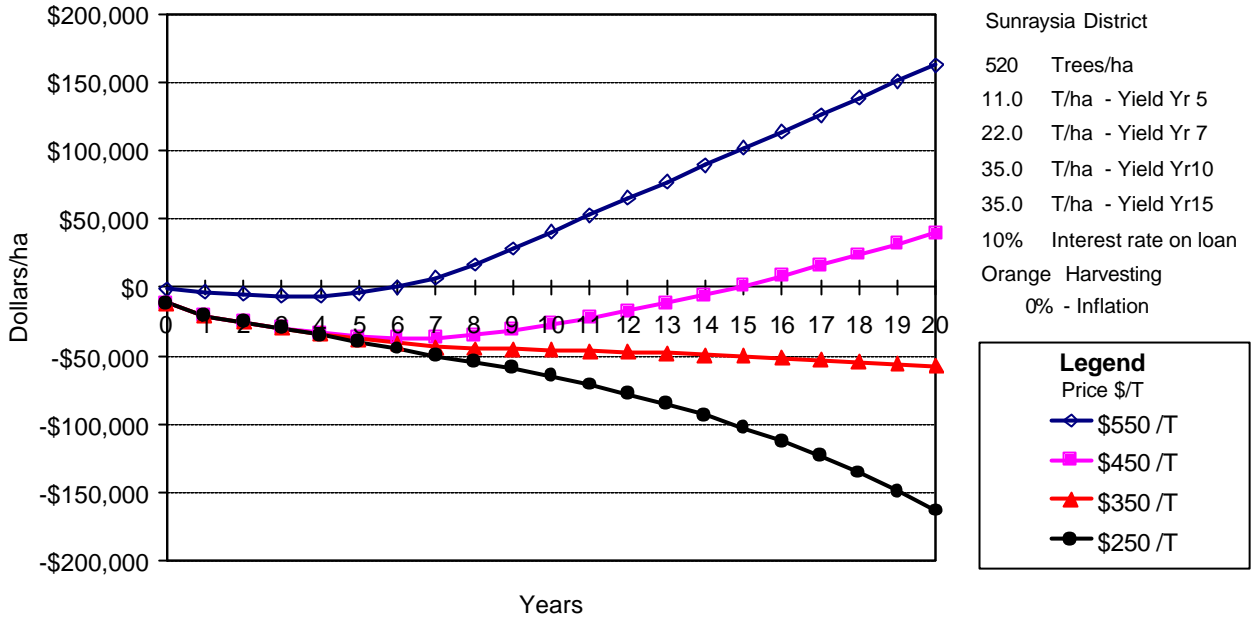
Washington Navels Cumulative Cash Flow / ha

Yield Sensitivity Graph - No Finance



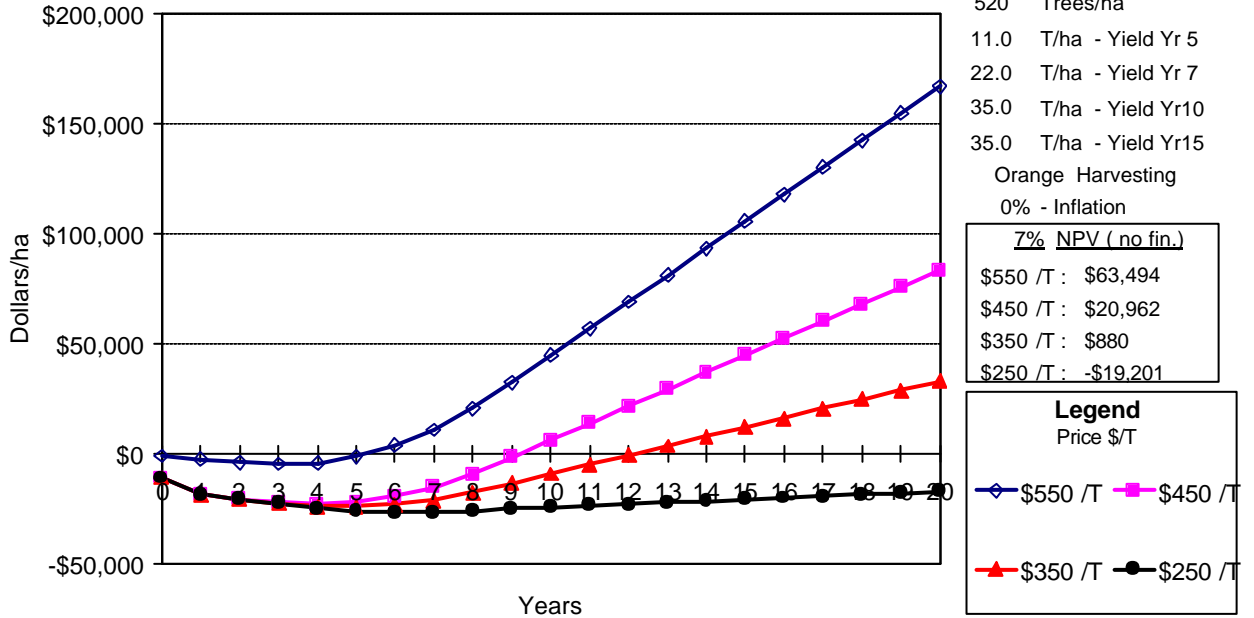
Washington Navels Cumulative Cash Flow / ha

Price Sensitivity Graph - With Finance



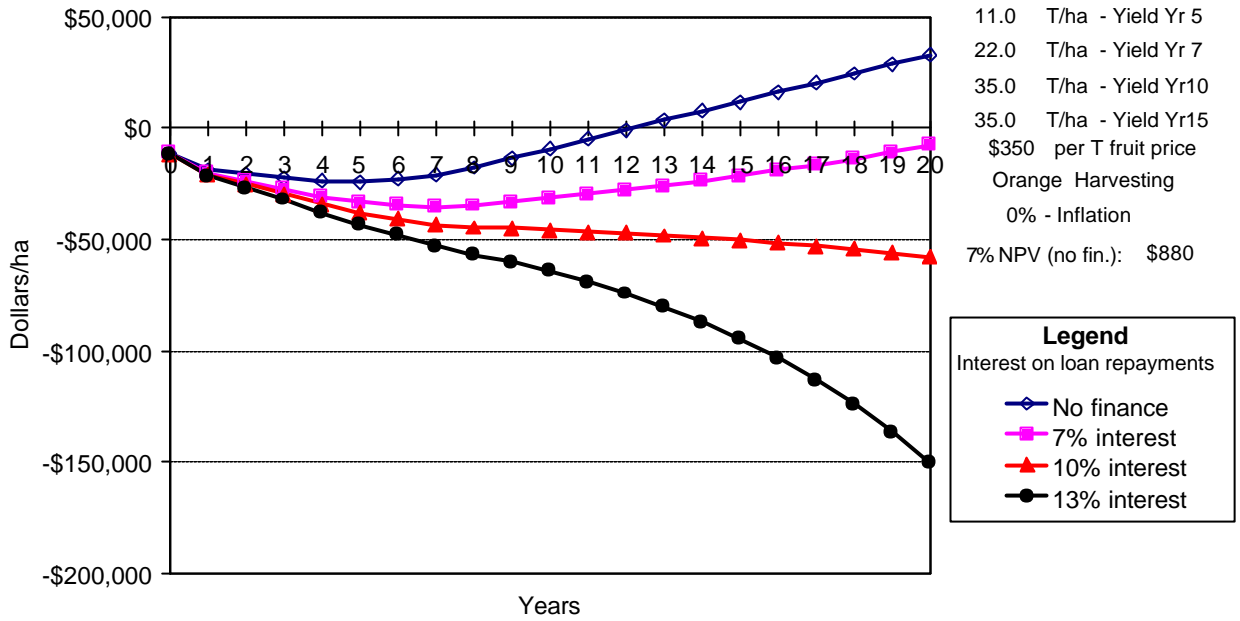
Washington Navels Cumulative Cash Flow / ha

Price Sensitivity Graph - No Finance



Washington Navels Cumulative Cash Flow / ha

Interest Rate Sensitivity Graph



Enterprise **Washington Navels** **Establishment & Planting**
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 520 trees/ha

COSTS - Year 0

Land Preparation

1.0 x Removal of irrigation lines	8 /hrs/ha @	\$14.0 /hr	\$112.00
1.0 x Install irrigation lines	16 /hrs/ha @	\$14.0 /hr	\$224.00
1.0 x Removal of old trees	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Ripping	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Surveying		\$40.0 /ha	\$40.00
1.0 x Cultivating	3 hrs/ha @	\$11.7 /hr	\$35.10
1.0 x Discing	4 hrs/ha @	\$11.7 /hr	\$46.80
1.0 x Pegging - cnt. labour	@	\$80.0 /ha	\$80.00
1.0 x Wind breaks	@	\$200.0 /ha	\$200.00
1.0 x Sod culture (seed & contract sowing)	@	\$200.0 /ha	\$200.00
			Total \$2,938

Irrigation system

1.0 x Micro spray irrigation system (sprinkler, pipe etc)		\$6,500 /ha	\$6,500
			Total \$6,500

Total Costs - Land Preparation **\$9,438**

Planting - Added to year 1

1.0 x Trees	520 tree @	\$9.00 /tree	\$4,680.00
1.0 x Planting	520 tree @	\$1.00 /tree	\$520.00
1.0 x Tree guards	520 each @	\$0.55 /each	\$286.00

Total Costs - Palnting (Yr 1) **\$5,486**

Enterprise Washington Navels **YEAR : 1 to 3**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
6.0 x Glyphosate	2	L/ha	\$4.85 /L	\$58.20	<u> </u>
				Total	<u>\$58.20</u>
Fertiliser					
3.0 x Urea		0.11 T/ha	\$550 /T	\$60.50	
2.0 x ZM (foliar liquid)	10	L/ha	\$1.44 /L	\$28.88	
				Total	<u>\$89.38</u>
Insecticides					
4.0 x Oil Spray	7	L/ha	\$1.78 /L	\$49.85	<u> </u>
				Total	<u>\$49.85</u>
Pruning					
1.0 x Hand Pruning	0.5	min/tree	\$14.00 /hr	\$60.7	<u> </u>
				Total	<u>\$60.67</u>
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr	\$58.94	
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr	\$15.00	
0.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2	hrs/ha	\$3.00 /hr	\$36.00	
3.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr	\$54.90	
0.0 x OB Spray	3	hrs/ha	\$15.03 /hr	\$0.00	
6.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr	\$160.92	
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr	\$12.70	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$1.17	<u> </u>
				Total	<u>\$339.63</u>
				Total Partial Variable Costs	<u>\$598</u>

Enterprise Washington Navels **YEAR : 4 to 6**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
					Total <u>\$117.55</u>
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.07 T/ha	\$540 /T		\$37.80
1.0 x Muriate of Potash		0.07 T/ha	\$580 /T		\$40.60
2.0 x ZM (foliar liquid)	15	L/ha	\$1.44 /L		\$43.32
					Total <u>\$264.72</u>
Fungicides					
1.0 x Copper Oxychloride	4	kg/ha	\$3.80 /kg		\$15.20
					Total <u>\$15.20</u>
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$47.00
					Total <u>\$189.44</u>
Pruning					
1.0 x Hand Pruning	2	min/tree	\$14.00 /hr		\$242.7
					Total <u>\$242.67</u>
Crop Management					
0.5 x Leaf Analysis	1	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
					Total <u>\$290.00</u>
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
1.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$45.09
4.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$107.28
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$19.31
					Total <u>\$345.12</u>
					Total Partial Variable Costs <u><u>\$1,465</u></u>

Enterprise Washington Navels **YEAR : 7 to 9**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.10 T/ha	\$540 /T		\$54.00
1.0 x Muriate of Potash		0.10 T/ha	\$580 /T		\$58.00
1.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$28.88
				Total	\$283.88
Fungicides					
1.0 x Copper Oxychloride	5	kg/ha	\$3.80 /kg		\$19.00
				Total	\$19.00
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Bio Control (Aphytis)	0.5	release/ha	\$135.0 /release		\$67.50
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$47.00
				Total	\$256.94
Crop Management Sprays					
1.0 x G.A. + Wetter	0.2	kg/ha	\$840.0 /kg		\$168.00
				Total	\$168.00
Pruning					
1.0 x Hand Pruning	6	min/tree	\$14.00 /hr		\$728.00
0.5 x Mechanical Skirting	1	hr/ha	\$105.0 /hr		\$52.50
				Total	\$780.50
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.0 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
				Total	\$290.00
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
2.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$90.18
3.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$80.46
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$47.97
				Total	\$392.05
Total Partial Variable Costs					\$2,308

Enterprise Washington Navels **YEAR:10 to 20**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg	\$78.75	
4.0 x Glyphosate	2	L/ha	\$4.85 /L	\$38.80	
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T	\$143.00	
1.0 x Double Super		0.12 T/ha	\$540 /T	\$64.80	
1.0 x Muriate of Potash		0.14 T/ha	\$580 /T	\$81.20	
1.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L	\$28.88	
				Total	\$317.88
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$3.80 /kg	\$20.14	
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L	\$142.44	
1.0 x Bio Control (Aphytis)	1	release/ha	\$135.0 /release	\$135.00	
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L	\$47.00	
				Total	\$324.44
Crop Management Sprays					
2.0 x G.A. + Wetter	0.2	kg/ha	\$840 /kg	\$336.00	
1.0 x Cling Spray	0.4	L/ha	\$7.20 /L	\$2.88	
				Total	\$338.88
Pruning					
1.0 x Hand Pruning	8	min/tree	\$14.00 /hr	\$971	
0.3 x Mechanical Topping	1.1	hr/ha	\$105.0 /hr	\$34.65	
0.3 x Hedging (one side)	1.3	hr/ha	\$105.0 /hr	\$40.95	
0.5 x Mechanical Skirting	1	hr/ha	\$105.0 /hr	\$52.50	
				Total	\$1,098.77
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis	\$40.00	
1.0 x Pest Monitoring	1		\$250.0 /ha	\$250.00	
0.25 x Hand Fruit Thinning	10	min/tree	\$14.00 /hr	\$303.3	
				Total	\$593.33
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr	\$58.94	
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr	\$15.00	
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr	\$26.20	
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr	\$24.00	
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr	\$36.60	
3.0 x OB Spray	3	hrs/ha	\$15.03 /hr	\$135.27	
4.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr	\$107.28	
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr	\$12.70	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$61.43	
				Total	\$477.42

Total Partial Variable Costs **\$3,288**

Development Budget - Imperial Mandarins

Enterprise (per Ha): Imperial Mandarins

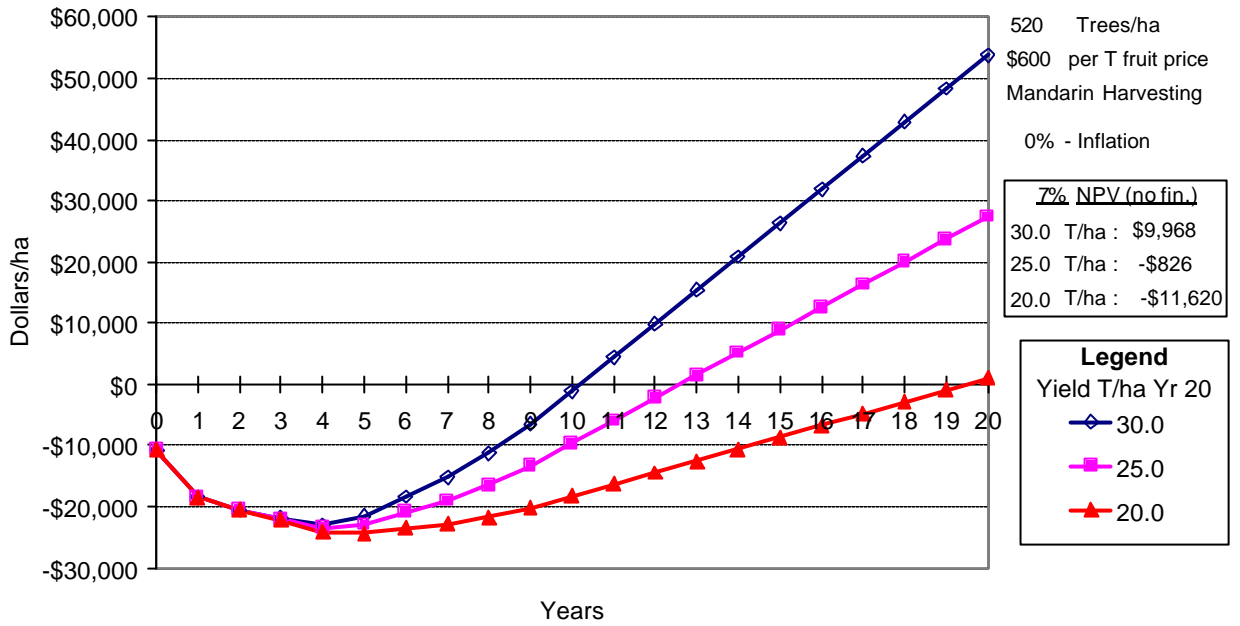
Description: Sod culture, undertree sprinkler
 Location: Sunraysia
 Tree density: 520 trees/ha
 Unit Size: 1 Hectare

7% NPV (no fin.) = -\$826
 Inflation = 0%
 Harvest (Mandarin, Orange or Machine) = Mandarin

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use Ml/ha	0	4	5	6	6	7	7	8	9	10	10	10	10
Income													
Yield T/ha	0	0	0	2.0	6.0	12.0	16.0	18.0	20.0	22.0	25.0	25.0	25.0
Fruit Prices \$/T	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600
Total Enterprise Income	\$0	\$0	\$0	\$1,200	\$3,600	\$7,200	\$9,600	\$10,800	\$12,000	\$13,200	\$15,000	\$15,000	\$15,000
Costs													
Yr 0 Site Preparation & Yr1 Planting	\$9,340	\$5,486											
Irrigation	\$491	\$629	\$663	\$702	\$702	\$773	\$773	\$845	\$916	\$987	\$987	\$987	\$987
Herbicide		\$58	\$58	\$58	\$118	\$118	\$118	\$118	\$118	\$118	\$118	\$118	\$118
Fertiliser		\$89	\$89	\$89	\$247	\$247	\$247	\$290	\$290	\$290	\$305	\$305	\$305
Fungicides		\$0	\$0	\$0	\$15	\$15	\$15	\$20	\$20	\$20	\$20	\$20	\$20
Insecticides		\$50	\$50	\$50	\$157	\$157	\$157	\$257	\$257	\$257	\$301	\$301	\$301
Crop Management Sprays		\$0	\$0	\$0	\$0	\$0	\$0	\$168	\$168	\$168	\$203	\$203	\$203
Pruning		\$61	\$61	\$61	\$364	\$364	\$364	\$781	\$781	\$781	\$1,099	\$1,099	\$1,099
Crop Management		\$0	\$0	\$0	\$775	\$775	\$775	\$775	\$775	\$775	\$897	\$897	\$897
Tractor		\$338	\$338	\$362	\$377	\$447	\$494	\$582	\$605	\$628	\$637	\$637	\$637
Contract Harvesting		\$0	\$0	\$450	\$1,350	\$2,700	\$3,600	\$4,050	\$4,500	\$4,950	\$5,625	\$5,625	\$5,625
Levies		\$0	\$0	\$15	\$44	\$88	\$117	\$131	\$146	\$161	\$183	\$183	\$183
Overhead & Fixed costs	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917
TOTAL COSTS	\$10,748	\$7,628	\$2,177	\$2,703	\$5,066	\$6,601	\$7,577	\$8,933	\$9,492	\$10,051	\$11,290	\$11,290	\$11,290
ANNUAL CASH SURPLUS/DEFICIT	-\$10,748	-\$7,628	-\$2,177	-\$1,503	-\$1,466	\$599	\$2,023	\$1,867	\$2,508	\$3,149	\$3,710	\$3,710	\$3,710
CUMULATIVE CASH FLOW (NO FINANCE)	-\$10,748	-\$18,376	-\$20,553	-\$22,056	-\$23,522	-\$22,924	-\$20,901	-\$19,033	-\$16,525	-\$13,377	-\$9,667	\$8,880	\$27,428
Loan interest rate	10%												
Interest charge	-\$497	-\$1,801	-\$2,197	-\$2,642	-\$3,160	-\$3,642	-\$3,957	-\$4,227	-\$4,472	-\$4,678	-\$4,882	-\$5,598	-\$6,751
CUMULATIVE CASH FLOW (After FINANCE)	-\$11,245	-\$20,674	-\$25,047	-\$29,193	-\$33,819	-\$36,862	-\$38,797	-\$41,156	-\$43,120	-\$44,649	-\$45,822	-\$53,696	-\$66,377

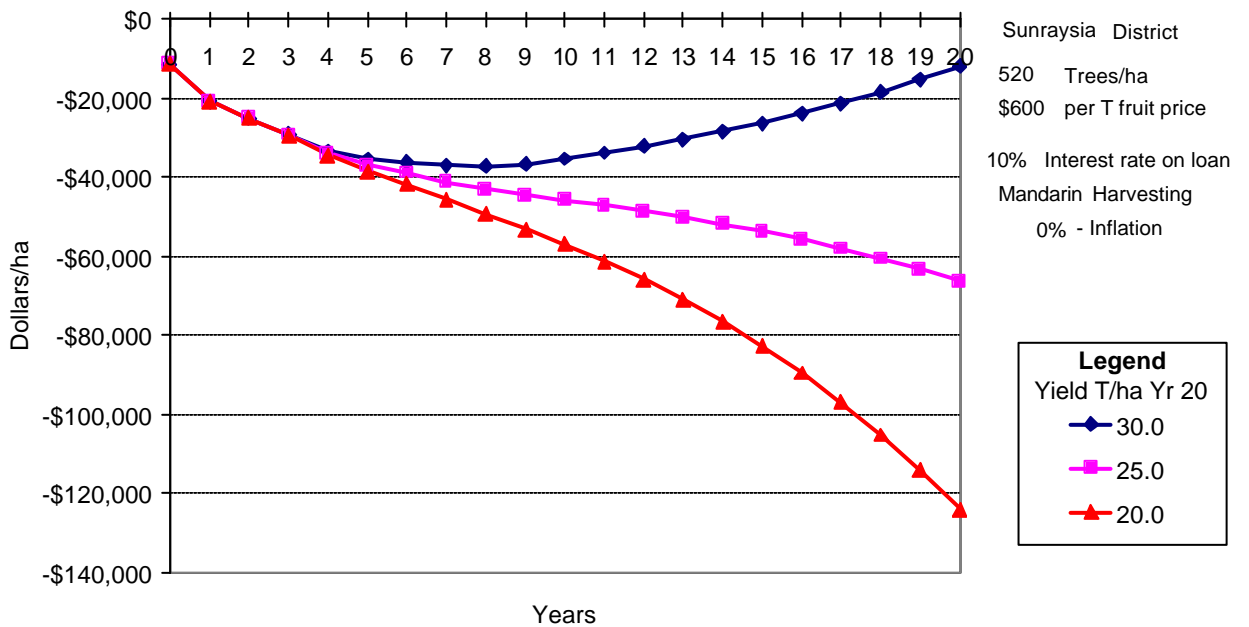
Imperial Mandarins Cumulative Cash Flow / ha

Yield Sensitivity Graph - No Finance



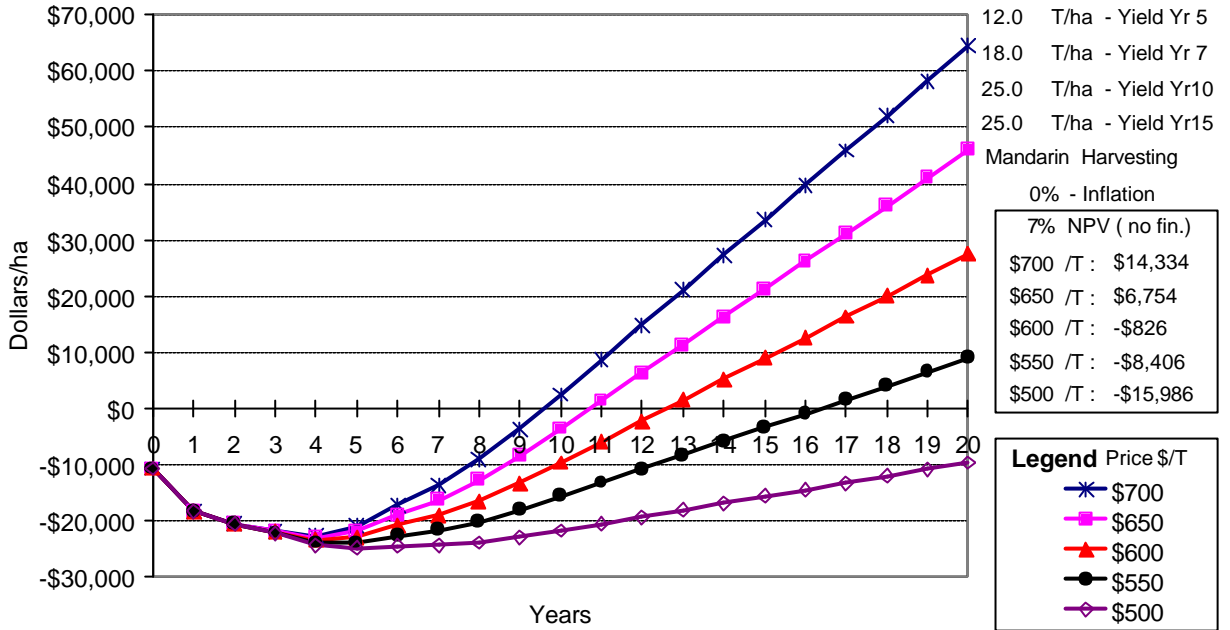
Imperial Mandarins Cumulative Cash Flow / ha

Yield Sensitivity Graph - With Finance



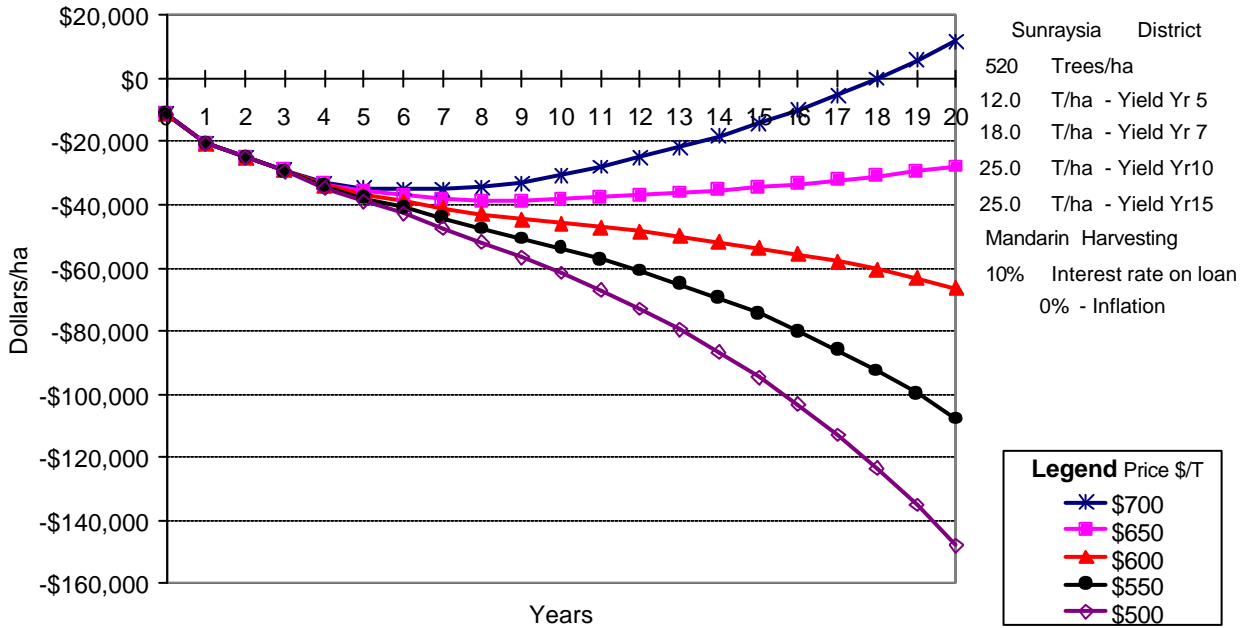
Imperial Mandarins Cumulative Cash Flow / ha

Price Sensitivity Graph - No Finance



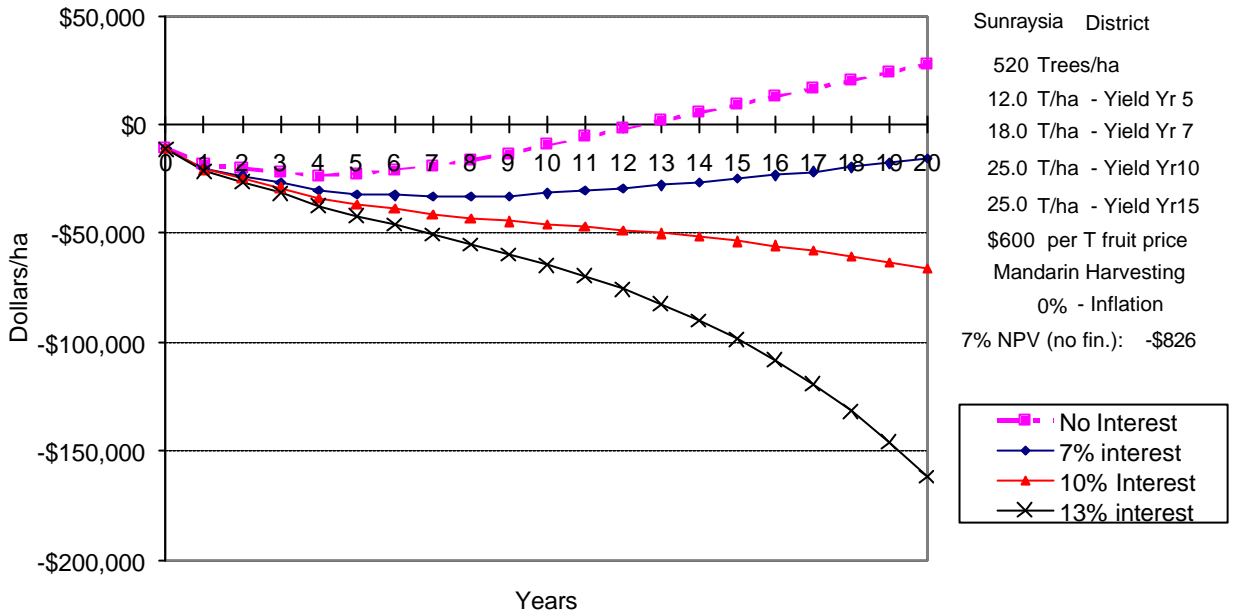
Imperial Mandarins Cumulative Cash Flow / ha

Price Sensitivity Graph - With Finance



Imperial Mandarins Cumulative Cash Flow / ha

Interest Rate Sensitivity Graph



Enterprise Imperial Mandarins Establishment & Planting

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

COSTS - Year 0

Land Preparation

1.0 x Removal of irrigation lines	8 /hrs/ha @	\$14.0 /hr	\$112.00
1.0 x Install irrigation lines	9 /hrs/ha @	\$14.0 /hr	\$126.00
1.0 x Removal of old trees	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Ripping	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Surveying		\$40.0 /ha	\$40.00
1.0 x Cultivating	3 hrs/ha @	\$11.7 /hr	\$35.10
1.0 x Discing	4 hrs/ha @	\$11.7 /hr	\$46.80
1.0 x Pegging - cnt. labour		\$80.0 /ha	\$80.00
1.0 x Wind breaks	@	\$200.0 /ha	\$200.00
1.0 x Sod culture (seed & contract sowing)	@	\$200.0 /ha	\$200.00
		Total	\$2,840

Irrigation system

1.0 x Micro spray irrigation system (sprinkler, pipe etc)	\$6,500 /ha	\$6,500
		Total \$6,500

Total Costs - Land Preparation **\$9,340**

Planting - Added to year 1

1.0 x Trees	520 tree @	\$9.00 /tree	\$4,680.00
1.0 x Planting	520 tree @	\$1.00 /tree	\$520.00
1.0 x Tree guards	520 each @	\$0.55 /each	\$286.00

Total Costs - Palnting (Yr 1) **\$5,486**

Enterprise Imperial Mandarins **YEAR : 1 to 3**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
6.0 x Glyphosate	2	L/ha	\$4.85 /L	\$58.20	
				Total	\$58.20
Fertiliser					
3.0 x Urea		0.11 T/ha	\$550 /T	\$60.50	
2.0 x ZM (foliar liquid)	10	L/ha	\$1.44 /L	\$28.88	
				Total	\$89.38
Insecticides					
4.0 x Oil Spray	7	L/ha	\$1.78 /L	\$49.85	
				Total	\$49.85
Pruning					
1.0 x Hand Pruning	0.5	min/tree	\$14.00 /hr	\$60.7	
				Total	\$60.67
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr	\$58.94	
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr	\$15.00	
0.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2	hrs/ha	\$3.00 /hr	\$36.00	
3.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr	\$54.90	
0.0 x OB Spray	3	hrs/ha	\$15.03 /hr	\$0.00	
6.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr	\$160.92	
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr	\$12.70	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$1.17	
				Total	\$339.63
Total Partial Variable Costs					\$598

Enterprise Imperial Mandarins **YEAR : 4 to 6**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
Total					\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.07 T/ha	\$540 /T		\$37.80
1.0 x Muriate of Potash		0.04 T/ha	\$580 /T		\$23.20
2.0 x ZM (foliar liquid)	15	L/ha	\$1.44 /L		\$43.32
Total					\$247.32
Fungicides					
1.0 x Copper Oxychloride	4	kg/ha	\$3.80 /kg		\$15.20
Total					\$15.20
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
0.3 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$14.10
Total					\$156.54
Pruning					
1.0 x Hand Pruning	3	min/tree	\$14.00 /hr		\$364.0
Total					\$364.00
Crop Management					
0.5 x Leaf Analysis	1	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
0.5 x Hand Fruit Thinning	8	min/tree	\$14.00 /hr		\$485.3
Total					\$775.33
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
1.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$45.09
3.3 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$88.51
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$19.89
Total					\$326.93
Total Partial Variable Costs					\$2,003

Enterprise Imperial Mandarins **YEAR : 7 to 9**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.10 T/ha	\$540 /T		\$54.00
1.0 x Muriate of Potash		0.06 T/ha	\$580 /T		\$34.80
2.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$57.76
				Total	\$289.56
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$3.80 /kg		\$20.14
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Bio Control (Aphytis)	0.5	release/ha	\$135.0 /release		\$67.50
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$47.00
				Total	\$256.94
Crop Management Sprays					
1.0 x G.A. + Wetter	0.2	kg/ha	\$840.0 /kg		\$168.00
				Total	\$168.00
Pruning					
1.0 x Hand Pruning	6	min/tree	\$14.00 /hr		\$728.0
0.5 x Mechanical Skirting	1	hr/ha	\$105.0 /hr		\$52.50
				Total	\$780.50
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.0
0.5 x Hand Fruit Thinning	8	min/tree	\$14.00 /hr		\$485.3
				Total	\$775.33
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
2.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$90.18
4.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$107.28
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$35.10
				Total	\$406.00
Total Partial Variable Costs					\$2,814

Enterprise Imperial Mandarins **YEAR : 10 to 20**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea	0.1	na T/ha	\$550 /T		\$165.00
1.0 x Double Super		0.12 T/ha	\$540 /T		\$64.80
1.0 x Muriate of Potash		0.08 T/ha	\$580 /T		\$46.40
1.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$28.88
				Total	\$305.08
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$3.80 /kg		\$20.14
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Bio Control (Aphytis)	1	release/ha	\$135 /release		\$135.00
0.5 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$23.50
				Total	\$300.94
Crop Management Sprays					
1.0 x G.A. + Wetter	0.2	kg/ha	\$840.0 /kg		\$168.00
0.5 x Ethephon	3	L/ha	\$23.20 /L		\$34.80
				Total	\$202.80
Pruning					
1.0 x Hand Pruning	8	min/tree	\$14.00 /hr		\$970.7
0.3 x Mechanical Topping	1.1	hr/ha	\$105.0 /hr		\$34.65
0.3 x Hedging (one side)	1.3	hr/ha	\$105.0 /hr		\$40.95
0.5 x Mechanical Skirting	1	hr/ha	\$105.0 /hr		\$52.50
				Total	\$1,098.77
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250 /ha		\$250.0
0.5 x Hand Fruit Thinning	10	min/tree	\$14.00 /hr		\$606.7
				Total	\$896.67
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
2.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$90.18
3.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$80.46
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$43.88
				Total	\$387.96
Total Partial Variable Costs					\$3,330

Development Budget – Mid Season Oranges

Enterprise (per Ha): Mid Season Oranges

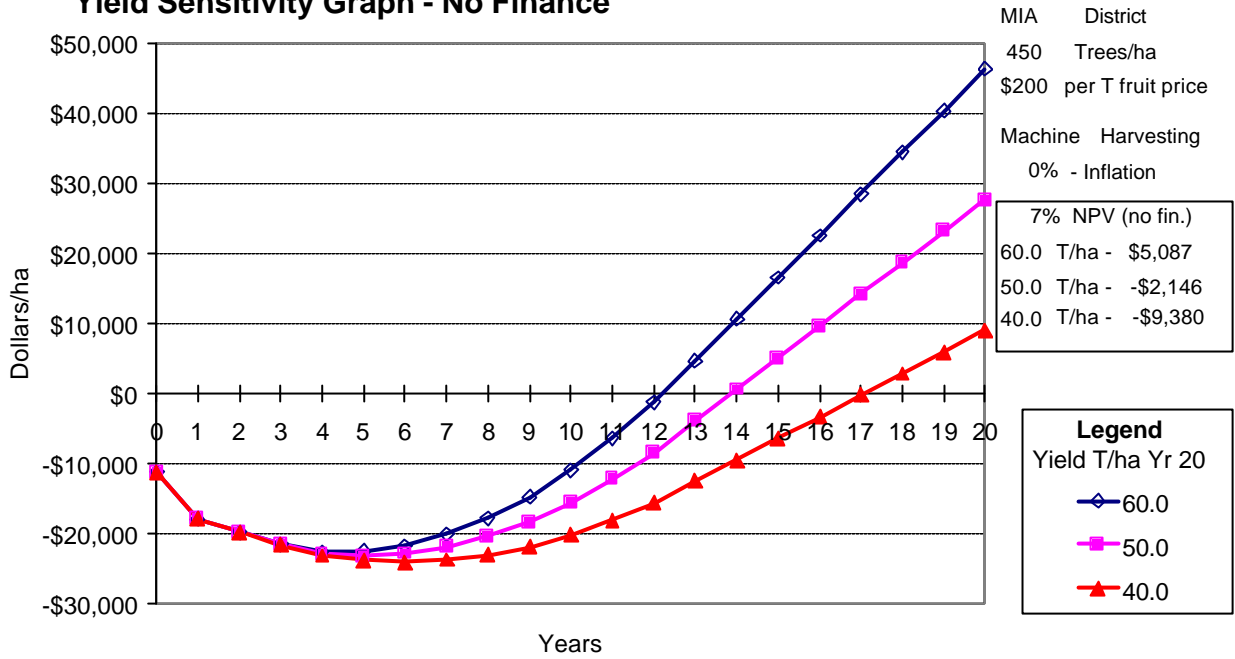
Description: Sod culture, undertree sprinkler
 Location: MIA
 Tree density: 450 trees/ha
 Unit Size: 1 Hectare

7% NPV (no fin.) = -\$2,146
 Inflation = 0%
 Harvest (Mandarin, Orange or Machine) = Machine

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use MI/ha	0	4	5	6	6	7	7	8	9	10	10	10	10
Income													
Yield T/ha	0	0	0	2.0	6.0	14.0	18.0	24.0	28.0	32.0	38.0	50.0	50.0
Fruit Prices \$/T	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Total Enterprise Income	\$0	\$0	\$0	\$400	\$1,200	\$2,800	\$3,600	\$4,800	\$5,600	\$6,400	\$7,600	\$10,000	\$10,000
Costs													
Yr 0 Site Preparation & Yr1 Planting	\$10,148	\$4,748											
Irrigation	\$144	\$369	\$425	\$482	\$482	\$538	\$538	\$594	\$651	\$707	\$707	\$707	\$707
Herbicide		\$72	\$72	\$72	\$97	\$97	\$97	\$97	\$97	\$97	\$97	\$97	\$97
Fertiliser		\$69	\$69	\$69	\$189	\$189	\$189	\$232	\$232	\$232	\$223	\$223	\$223
Fungicides		\$0	\$0	\$0	\$16	\$16	\$16	\$21	\$21	\$21	\$21	\$21	\$21
Insecticides		\$38	\$38	\$38	\$150	\$150	\$150	\$218	\$218	\$218	\$218	\$218	\$218
Crop Management Sprays		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pruning		\$105	\$105	\$105	\$53	\$53	\$53	\$105	\$105	\$105	\$208	\$208	\$208
Crop Management		\$0	\$0	\$0	\$40	\$40	\$40	\$20	\$20	\$20	\$40	\$40	\$40
Tractor		\$335	\$335	\$358	\$353	\$447	\$493	\$557	\$604	\$651	\$694	\$835	\$835
Contract Harvesting		\$0	\$0	\$77	\$231	\$539	\$693	\$924	\$1,078	\$1,232	\$1,463	\$1,925	\$1,925
Levies		\$0	\$0	\$12	\$35	\$81	\$104	\$138	\$161	\$184	\$219	\$288	\$288
Overhead & Fixed Costs	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917
Total Costs	\$11,209	\$6,652	\$1,961	\$2,129	\$2,562	\$3,066	\$3,289	\$3,823	\$4,104	\$4,384	\$4,806	\$5,478	\$5,478
ANNUAL CASH SURPLUS/DEFICIT	-\$11,209	-\$6,652	-\$1,961	-\$1,729	-\$1,362	-\$266	\$311	\$977	\$1,496	\$2,016	\$2,794	\$4,522	\$4,522
CUMULATIVE CASH FLOW (NO FINANCE)	-\$11,209	-\$17,861	-\$19,822	-\$21,551	-\$22,913	-\$23,179	-\$22,868	-\$21,892	-\$20,395	-\$18,379	-\$15,585	\$5,153	\$27,764
Loan interest rate	10%												
Interest charge	-\$543	-\$1,765	-\$2,136	-\$2,551	-\$2,993	-\$3,440	-\$3,815	-\$4,185	-\$4,513	-\$4,823	-\$5,119	-\$5,993	-\$6,892
CUMULATIVE CASH FLOW (After FINANCE)	-\$11,752	-\$20,169	-\$24,266	-\$28,546	-\$32,901	-\$36,606	-\$40,110	-\$43,319	-\$46,336	-\$49,142	-\$51,467	-\$59,233	-\$69,112

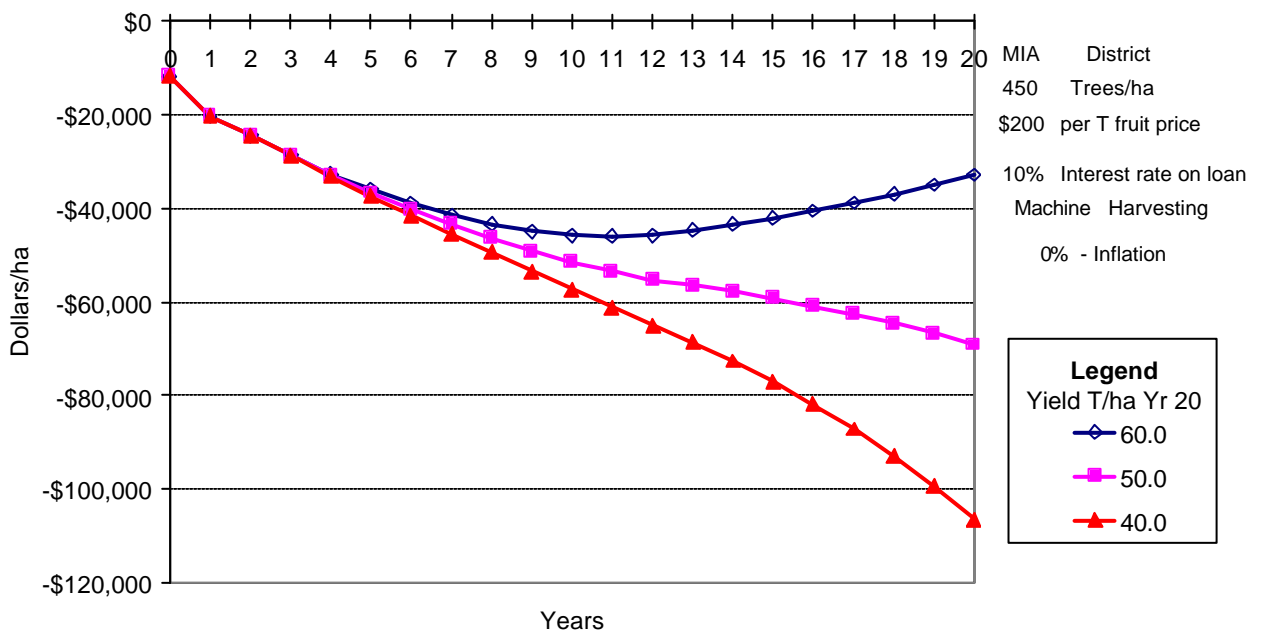
Mid Season Oranges Cumulative Cash Flow / ha

Yield Sensitivity Graph - No Finance



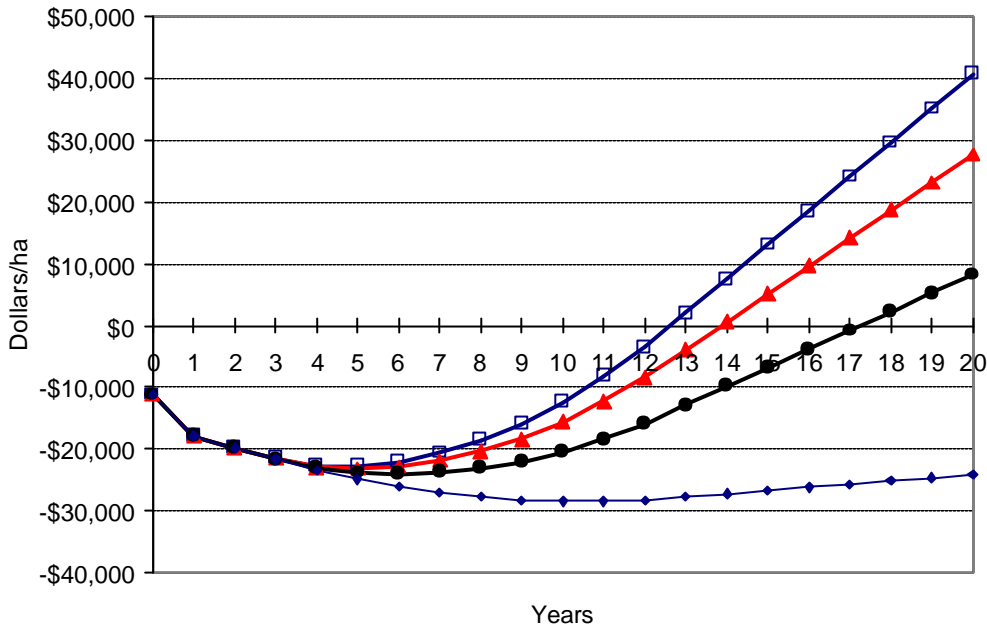
Mid Season Oranges Cumulative Cash Flow / ha

Yield Sensitivity Graph - With Finance



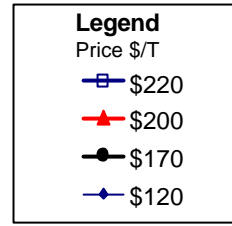
Mid Season Oranges Cumulative Cash Flow / ha

Price Sensitivity Graph - No Finance



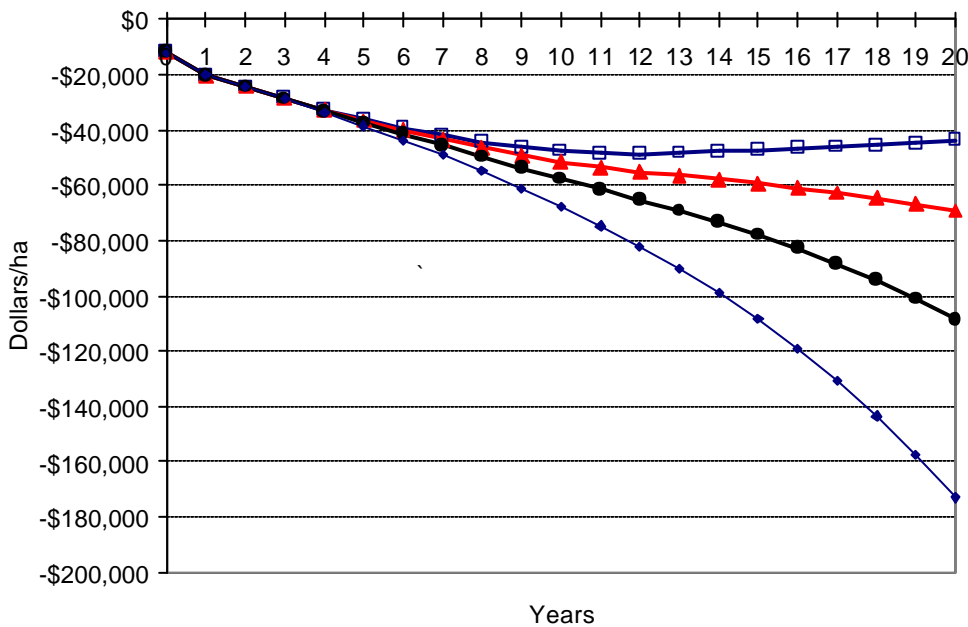
MIA District
 450 Trees/ha
 14.0 T/ha - Yield Yr 5
 24.0 T/ha - Yield Yr 7
 38.0 T/ha - Yield Yr10
 50.0 T/ha - Yield Yr15
 Machine Harvesting
 0% - Inflation

7% NPV (no fin.)
 \$220 /T : \$2,875
 \$200 /T : -\$2,146
 \$170 /T : -\$9,679
 \$120 /T : -\$22,233

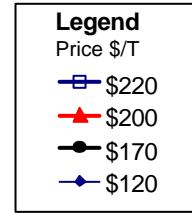


Mid Season Oranges Cumulative Cash Flow / ha

Price Sensitivity Graph - With Finance

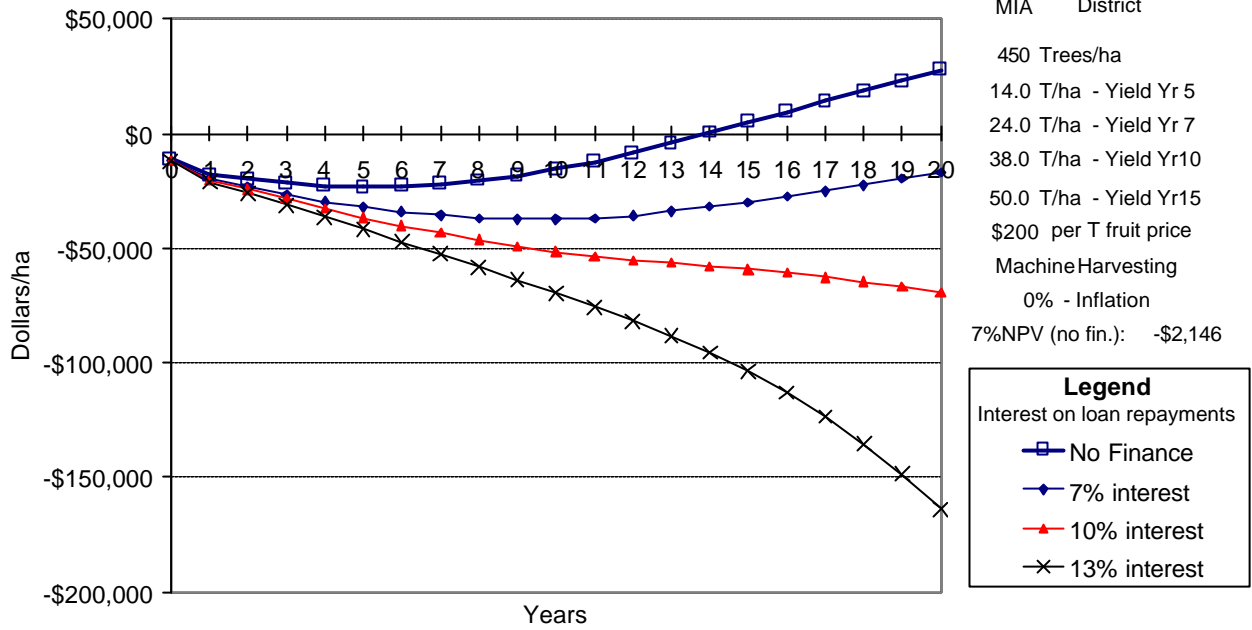


MIA District
 450 Trees/ha
 14.0 T/ha - Yield Yr 5
 24.0 T/ha - Yield Yr 7
 38.0 T/ha - Yield Yr10
 50.0 T/ha - Yield Yr15
 10% Interest rate on loan
 Machine Harvesting
 0% - Inflation



Mid Season Oranges Cumulative Cash Flow / ha

Interest Rate Sensitivity Graph



Enterprise **Mid Season Oranges** **Establishment & Planting**
Description Sod culture, undertree sprinkler
Location MIA
Tree density 450 trees/ha

COSTS - Year 0

Land Preparation

1.0 x Removal of irrigation lines	8 /hrs/ha @	\$14.0 /hr	\$112.00
1.0 x Install irrigation lines	16 /hrs/ha @	\$14.0 /hr	\$224.00
1.0 x Removal of old trees	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Ripping	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Surveying		\$40.0 /ha	\$40.00
1.0 x Gypsum		\$260.0 /ha	\$260.00
1.0 x Cultivating	3 hrs/ha @	\$11.7 /hr	\$35.10
1.0 x Discing	4 hrs/ha @	\$11.7 /hr	\$46.80
1.0 x Row mounding	5 hrs/ha @	\$90.0 /hr	\$450.00
1.0 x Pegging - cnt. labour		\$80.0 /ha	\$80.00
1.0 x Wind breaks	@	\$200.0 /ha	\$200.00
1.0 x Sod culture (seed & contract sowing)	@	\$200.0 /ha	\$200.00
		Total	<u>\$3,648</u>

Irrigation system

1.0 x Micro spray irrigation system (sprinkler, pipe etc)	\$6,500 /ha	\$6,500
		Total <u>\$6,500</u>

Total Costs - Land Preparation **\$10,148**

Planting - Added to year 1

1.0 x Trees	450 tree @	\$9.00 /tree	\$4,050.00
1.0 x Planting	450 tree @	\$1.00 /tree	\$450.00
1.0 x Tree guards	450 each @	\$0.55 /each	\$247.50

Total Costs - Palnting (Yr 1) **\$4,748**

Enterprise Mid Season Oranges **YEAR : 1 to 3**

Description Sod culture, undertree sprinkler

Location MIA

Tree density 450 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

Applications	Rate	Rate			
Herbicide	/app	/year			
6.0 x Glyphosate	2	L/ha	\$6.00 /L	\$72.00	
				Total	\$72.00
Fertiliser					
3.0 x Urea		0.10 T/ha	\$405 /T	\$40.50	
2.0 x ZM (foliar liquid)	10	L/ha	\$1.44 /L	\$28.88	
				Total	\$69.38
Insecticides					
4.0 x Oil Spray	5	L/ha	\$1.88 /L	\$37.56	
				Total	\$37.56
Pruning					
1.0 x Hand Pruning	1	min/tree	\$14.00 /hr	\$105.0	
				Total	\$105.00
Tractor					
6.0 x Sod Mowing	0.5	hrs/ha	\$12.28 /hr	\$36.84	
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr	\$15.00	
0.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2	hrs/ha	\$3.00 /hr	\$36.00	
3.0 x Ground Fertilise	2	hrs/ha	\$12.20 /hr	\$73.20	
0.0 x OB Spray	3	hrs/ha	\$15.03 /hr	\$0.00	
6.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr	\$160.92	
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr	\$12.70	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$1.17	
				Total	\$335.83

Total Partial Variable Costs **\$620**

Enterprise Mid Season Oranges **YEAR : 4 to 6**

Description Sod culture, undertree sprinkler

Location MIA

Tree density 450 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5		kg/ha	\$19.50 /kg	\$48.75
4.0 x Glyphosate	2		L/ha	\$6.00 /L	\$48.00
					Total <u>\$96.75</u>
Fertiliser					
3.0 x Urea		0.25	T/ha	\$405 /T	\$101.25
1.0 x Double Super		0.06	T/ha	\$500 /T	\$30.00
1.0 x Muriate of Potash		0.03	T/ha	\$480 /T	\$14.40
2.0 x ZM (foliar liquid)	15		L/ha	\$1.44 /L	\$43.32
					Total <u>\$188.97</u>
Fungicides					
1.0 x Copper Oxychloride	4		kg/ha	\$4.00 /kg	\$16.00
					Total <u>\$16.00</u>
Insecticides					
1.0 x Oil Spray	80		L/ha	\$1.88 /L	\$150.24
					Total <u>\$150.24</u>
Pruning					
0.5 x Hand Pruning	1		min/tree	\$14.00 /hr	\$52.5
					Total <u>\$52.50</u>
Crop Management					
0.5 x Leaf Analysis	1		analysis	\$80.00 /analysis	\$40.00
					Total <u>\$40.00</u>
Tractor					
6.0 x Sod Mowing	0.5		hrs/ha	\$12.28 /hr	\$36.84
25.0 x Check Emitters	0.2		hrs/ha	\$3.00 /hr	\$15.00
1.0 x Herbicide Rows	2		hrs/ha	\$13.10 /hr	\$26.20
4.0 x Spot Spray	2		hrs/ha	\$3.00 /hr	\$24.00
2.0 x Ground Fertilise	2		hrs/ha	\$12.20 /hr	\$48.80
1.0 x OB Spray	3		hrs/ha	\$15.03 /hr	\$45.09
3.0 x Airblast Spray	2		hrs/ha	\$13.41 /hr	\$80.46
0.5 x Mulch Prunings	1		hrs/ha	\$12.70 /hr	\$6.35
1.0 x Bin Placement	0.15		hrs/T	\$11.70 /hr	\$22.23
					Total <u>\$304.97</u>
Total Partial Variable Costs					<u>\$849</u>

Enterprise Mid Season Oranges **YEAR : 7 to 9**

Description Sod culture, undertree sprinkler

Location MIA

Tree density 450 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5		kg/ha	\$19.50 /kg	\$48.75
4.0 x Glyphosate	2		L/ha	\$6.00 /L	\$48.00
					Total <u>\$96.75</u>
Fertiliser					
3.0 x Urea		0.26	T/ha	\$405 /T	\$105.30
1.0 x Double Super		0.09	T/ha	\$500 /T	\$45.00
1.0 x Muriate of Potash		0.05	T/ha	\$480 /T	\$24.00
2.0 x ZM (foliar liquid)	20		L/ha	\$1.44 /L	\$57.76
					Total <u>\$232.06</u>
Fungicides					
1.0 x Copper Oxychloride	5.3		kg/ha	\$4.00 /kg	\$21.20
					Total <u>\$21.20</u>
Insecticides					
1.0 x Oil Spray	80		L/ha	\$1.88 /L	\$150.24
1.0 x Bio Control (Aphytis)	0.5		release/ha	\$135.0 /release	\$67.50
					Total <u>\$217.74</u>
Pruning					
1.0 x Mechanical Skirting	1		hr/ha	\$105.0 /hr	\$105.00
					Total <u>\$105.00</u>
Crop Management					
0.5 x Leaf Analysis	0.5		analysis	\$80.00 /analysis	\$20.00
					Total <u>\$20.00</u>
Tractor					
6.0 x Sod Mowing	0.5		hrs/ha	\$12.28 /hr	\$36.84
25.0 x Check Emitters	0.2		hrs/ha	\$3.00 /hr	\$15.00
1.0 x Herbicide Rows	2		hrs/ha	\$13.10 /hr	\$26.20
4.0 x Spot Spray	2		hrs/ha	\$3.00 /hr	\$24.00
2.0 x Ground Fertilise	2		hrs/ha	\$12.20 /hr	\$48.80
1.0 x OB Spray	3		hrs/ha	\$15.03 /hr	\$45.09
3.0 x Airblast Spray	2		hrs/ha	\$13.41 /hr	\$80.46
0.0 x Mulch Prunings	1		hrs/ha	\$12.70 /hr	\$0.00
1.0 x Bin Placement	0.15		hrs/T	\$11.70 /hr	\$49.14
					Total <u>\$325.53</u>
Total Partial Variable Costs					<u>\$1,018</u>

Enterprise Mid Season Oranges **YEAR : 10 to 20**

Description Sod culture, undertree sprinkler

Location MIA

Tree density 450 trees/ha

Unit size 1 ha

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5	kg/ha	\$19.50 /kg		\$48.75
4.0 x Glyphosate	2	L/ha	\$6.00 /L		\$48.00
				Total	\$96.75
Fertiliser					
3.0 x Urea		0.26 T/ha	\$405 /T		\$105.30
1.0 x Double Super		0.12 T/ha	\$500 /T		\$60.00
1.0 x Muriate of Potash		0.06 T/ha	\$480 /T		\$28.80
1.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$28.88
				Total	\$222.98
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$4.00 /kg		\$21.20
				Total	\$21.20
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.88 /L		\$150.24
1.0 x Bio Control (Aphytis)	0.5	release/ha	\$135.0 /release		\$67.50
				Total	\$217.74
Pruning					
0.3 x Mechanical Topping	1.1	hr/ha	\$105.0 /hr		\$34.65
0.5 x Hedging (one side)	1.3	hr/ha	\$105.0 /hr		\$68.25
1.0 x Mechanical Skirting	1	hr/ha	\$105.0 /hr		\$105.00
				Total	\$207.90
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
				Total	\$40.00
Tractor					
6.0 x Sod Mowing	0.5	hrs/ha	\$12.28 /hr		\$36.84
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	2	hrs/ha	\$12.20 /hr		\$48.80
1.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$45.09
2.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$53.64
0.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$0.00
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$78.98
				Total	\$328.55
Total Partial Variable Costs					\$1,135

Development Budget – High Density Navel Planting

HIGH DENSITY PLANTING

Higher density planting is considered as a strategy to provide quicker returns. It is important to properly budget for a high density planting. Although higher yields in the early years may be achieved, higher initial costs may be incurred reducing the profitability of the enterprise. It is important to analyse your own budget to investigate which planting density suits your circumstances.

Considerations

Planting at a higher density would increase yields in the early years. However when planting at a higher density there are some economic considerations that should be considered. Some of these considerations are as follows:

- The initial cost of planting will increase due to the purchase of more trees
- The need for hedging or pruning may increase. The need for hedging/pruning will depend upon the vigour of the trees and if the trees were inoculated with the dwarfing viriod.
- At very close densities specialised machinery may be required to work within narrow spaces

Tree growth and size is one of the important considerations when selecting a planting density. Trees can perform differently on individual sites and it is important to investigate an orchards expected tree vigour. Seek advice from orchards in a similar climate, soil and management system to assist in guiding you on judging an orchard's expected vigour.

Assumptions

The basic assumptions for the budgets are the same as mentioned in the Development Budgets section apart from those as discussed as follows:

The high density planting development budget is only a guide. The assumptions selected for the high density budgets are only for one scenario. These budgets may not properly represent your circumstances and it is important to construct your own budgets. To enable you to develop your own budgets a copy of the budget spreadsheets in an Excel format are available from the NSW Agriculture Farm Business & Trade Web site. The excel spreadsheets available from the web are only a guide as they do not include a detailed analysis of overhead costs, fixed costs and taxation considerations. The spreadsheets from the web are also limited to their design constraints.

The assumed standard density planting for replanting (520trees/ha) would have a row spacing of 5.5 meters and a tree spacing of 3.5 meters.

The 790trees/ha spacing development budget is for non dwarfed trees at a row spacing of 5.1 meters and a tree spacing of 2.5 meters. The 1010 spacing development budget is for dwarfed trees at a row spacing of 4 meters and a tree spacing of 2.5 meters. The yield increase in the early years of growth is calculated as function of number of trees as compared to the standard density planting (i.e. 790 trees/ha is approximately a 50% increase in trees from 520 trees/ha and therefore would increase early yields by 50%. The mature tree yield is calculated as a function of the extra rows as compared to the standard density planting. The yield results of this calculation (mature tree yield) is then reduced to compensate for a yield reduction caused by extra hedging practices and tree crowding effect. For the 790 trees/ha

development budget, a reduction from 5.5m to 5.1m rows in a square block would increase the number of rows by 8.5%, however final mature tree yield is assumed at 5%. For the 1010 trees/ha budget, a reduction from 5.5m to 4m rows in a square block would increase the number of rows by 27%, however with the smaller tree size and some increase pruning, the increase in final mature tree yield is assumed at 20%. The calculations for high density have also been cross referenced with field trial data.

Inputs such as sprays, fertilisers and tractor use are increased as a function of the extra number of rows. Hand pruning young trees (below 10yo), is given approximately the same time to prune each tree on a per tree basis. Hand pruning mature trees is calculated on a per ha basis with the cost of pruning increasing as a function of the extra amount of rows.

The dwarfing viriod inoculation in the 1010 trees/ha development budget is assumed to slow tree growth after 5 years of age. The dwarfing inoculation is assumed to reduce tree vigour by about 25%. This would reduce the need for an intensive hedging and pruning program. However the reduced tree growth would also reduce the yield per tree as compared to an uninoculated tree.

Enterprise (per Ha): Washington Navels- High Density 1

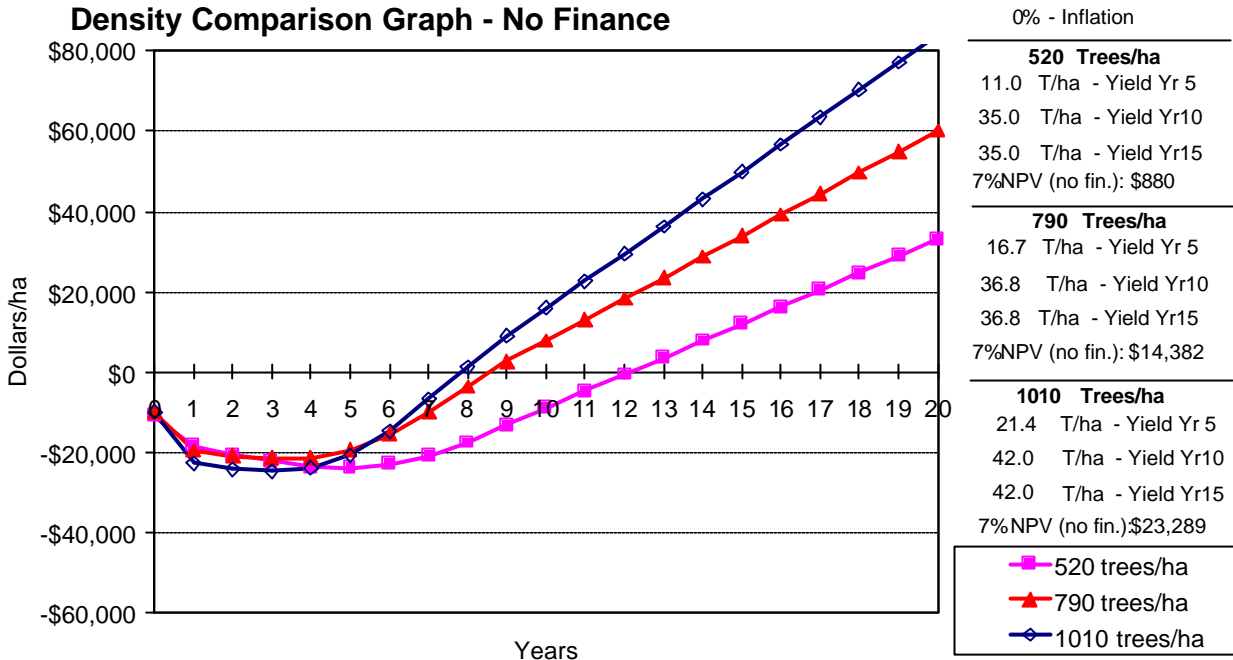
Description: Sod culture, undertree sprinkler
 Location: Sunraysia
 Tree density: 790 trees/ha
 Unit Size 1 ha

7% NPV (no fin.) = \$14,382
 Inflation = 0%
 Harvest (Mandarin, Orange or Machine) = Orange

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use Ml/ha	0	4	5	6	6	7	7	8	9	10	10	10	10
Income													
Yield T/ha	0	0	0	3	9	17	24	33	37	37	37	37	37
Fruit Prices \$/T	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Total Income	\$0	\$0	\$0	\$1,063	\$3,190	\$5,849	\$8,508	\$11,698	\$12,863	\$12,863	\$12,863	\$12,863	\$12,863
Costs													
Yr 0 Site Preparation & Yr1 Planting	\$9,438	\$8,335											
Irrigation	\$491	\$629	\$663	\$702	\$702	\$773	\$773	\$845	\$916	\$987	\$987	\$987	\$987
Herbicide		\$63	\$63	\$63	\$128	\$128	\$128	\$128	\$128	\$128	\$128	\$128	\$128
Fertiliser		\$125	\$125	\$125	\$309	\$309	\$309	\$343	\$343	\$343	\$343	\$343	\$343
Fungicides		\$0	\$0	\$0	\$16	\$16	\$16	\$21	\$21	\$21	\$22	\$22	\$22
Insecticides		\$54	\$54	\$54	\$206	\$206	\$206	\$273	\$273	\$273	\$341	\$341	\$341
Crop Management Sprays		\$0	\$0	\$0	\$0	\$0	\$0	\$182	\$182	\$182	\$368	\$368	\$368
Pruning		\$92	\$92	\$92	\$369	\$369	\$369	\$979	\$979	\$979	\$1,185	\$1,185	\$1,185
Crop Management		\$0	\$0	\$0	\$290	\$290	\$290	\$290	\$290	\$290	\$751	\$751	\$751
Tractor		\$367	\$367	\$403	\$460	\$549	\$638	\$764	\$803	\$803	\$881	\$881	\$881
Contract Harvesting		\$0	\$0	\$194	\$583	\$1,070	\$1,556	\$2,139	\$2,352	\$2,352	\$2,352	\$2,352	\$2,352
Levies		\$0	\$0	\$22	\$67	\$122	\$177	\$244	\$268	\$268	\$268	\$268	\$268
Overhead & Fixed costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Costs		\$9,665	\$1,365	\$1,656	\$3,130	\$3,832	\$4,462	\$6,207	\$6,554	\$6,626	\$7,625	\$7,625	\$7,625
ANNUAL CASH SURPLUS/DEFICIT	-\$9,929	-\$9,665	-\$1,365	-\$592	\$61	\$2,018	\$4,046	\$5,491	\$6,308	\$6,237	\$5,237	\$5,237	\$5,237
CUMULATIVE CASH FLOW (NO FINANCING)	-\$9,929	-\$19,594	-\$20,958	-\$21,551	-\$21,490	-\$19,472	-\$15,427	-\$9,935	-\$3,627	\$2,609	\$7,847	\$34,033	\$60,220
Loan interest rate		10%											
Interest charge	-\$453	-\$1,953	-\$2,283	-\$2,654	-\$3,055	-\$3,368	-\$3,513	-\$3,557	-\$3,372	-\$3,083	-\$2,837	-\$1,372	\$0
CUMULATIVE CASH FLOW (After FINANCE)	-\$10,382	-\$22,000	-\$25,648	-\$28,895	-\$31,889	-\$33,239	-\$32,706	-\$30,772	-\$27,836	-\$24,682	-\$22,282	-\$6,163	\$18,244

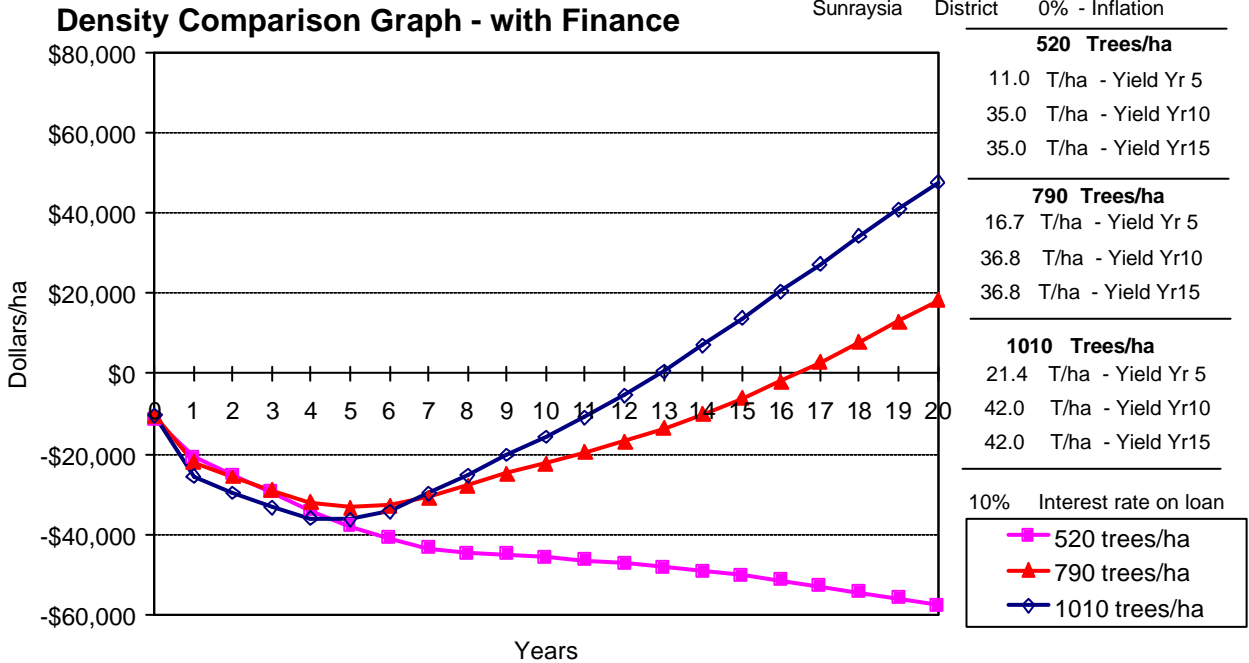
Washington Navel Cumulative Cash Flow / ha

Sunraysia District
0% - Inflation



Washington Navel Cumulative Cash Flow / ha

Sunraysia District 0% - Inflation



Enterprise Washington Navels- High Density 1 Establishment & Planting

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 790 trees/ha

Unit size 1 ha

COSTS - Year 0

Land Preparation

1.0 x Removal of irrigation lines	8 /hrs/ha	@	\$14.0 /hr	\$112.00
1.0 x Install irrigation lines	16 /hrs/ha	@	\$14.0 /hr	\$224.00
1.0 x Removal of old trees	10 hrs/ha	@	\$100.0 /hr	\$1,000.00
1.0 x Ripping	10 hrs/ha	@	\$100.0 /hr	\$1,000.00
1.0 x Surveying			\$40.0 /ha	\$40.00
1.0 x Cultivating	3 hrs/ha	@	\$11.7 /hr	\$35.10
1.0 x Discing	4 hrs/ha	@	\$11.7 /hr	\$46.80
1.0 x Pegging - cnt. labour		@	\$80.0 /ha	\$80.00
1.0 x Wind breaks		@	\$200.0 /ha	\$200.00
1.0 x Sod culture (seed & contract sowing)		@	\$200.0 /ha	\$200.00
			Total	\$2,938

Irrigation system

1.0 x Micro spray irrigation system (sprinkler, pipe etc)	\$6,500 /ha			\$6,500
			Total	\$6,500

Total Costs - Land Preparation **\$9,438**

Planting - Added to year 1

1.0 x Trees	790 tree	@	\$9.00 /tree	\$7,110.00
1.0 x Planting	790 tree	@	\$1.00 /tree	\$790.00
1.0 x Tree guards	790 each	@	\$0.55 /each	\$434.50

Total Costs - Planting (Yr 1) **\$8,335**

Enterprise Washington Navels- High Density 1
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 790 trees/ha
Unit size 1 ha

YEAR : 1 to 3

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

Applications	Rate	Rate			
Herbicide	/app	/year			
6.0 x Glyphosate	2.17	L/ha	\$4.85 /L	\$63.16	
				Total	\$63.16
Fertiliser					
3.0 x Urea		0.17 T/ha	\$550 /T	\$93.50	
2.0 x ZM (foliar liquid)	10.9	L/ha	\$1.44 /L	\$31.34	
				Total	\$124.84
Insecticides					
4.0 x Oil Spray	7.6	L/ha	\$1.78 /L	\$54.10	
				Total	\$54.10
Pruning					
1.0 x Hand Pruning	0.5	min/tree	\$14.00 /hr	\$92.2	
				Total	\$92.17
Tractor					
6.0 x Sod Mowing	0.87	hrs/ha	\$12.28 /hr	\$63.96	
25.0 x Check Emitters	0.22	hrs/ha	\$3.00 /hr	\$16.28	
0.0 x Herbicide Rows	2.17	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2.17	hrs/ha	\$3.00 /hr	\$39.07	
3.0 x Ground Fertilise	1.63	hrs/ha	\$12.20 /hr	\$59.58	
0.0 x OB Spray	3.26	hrs/ha	\$15.03 /hr	\$0.00	
6.0 x Airblast Spray	2.17	hrs/ha	\$13.41 /hr	\$174.62	
1.0 x Mulch Prunings	1.09	hrs/ha	\$12.70 /hr	\$13.78	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$1.78	
				Total	\$369.07
Total Partial Variable Costs					\$703

Enterprise Washington Navels- High Density 1
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 790 trees/ha
Unit size 1 ha

YEAR : 10 to 20

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.71	kg/ha	\$31.50 /kg		\$85.46
4.0 x Glyphosate	2.17	L/ha	\$4.85 /L		\$42.10
				Total	\$127.56
Fertiliser					
3.0 x Urea		0.28 T/ha	\$550 /T		\$154.00
1.0 x Double Super		0.13 T/ha	\$540 /T		\$70.20
1.0 x Muriate of Potash		0.15 T/ha	\$580 /T		\$87.00
1.0 x ZM (foliar liquid)	21.7	L/ha	\$1.44 /L		\$31.34
				Total	\$342.54
Fungicides					
1.0 x Copper Oxychloride	5.75	kg/ha	\$3.80 /kg		\$21.86
				Total	\$21.86
Insecticides					
1.0 x Oil Spray	86.8	L/ha	\$1.78 /L		\$154.57
1.0 x Bio Control (Aphytis)	1	release/l	\$135.0 /release		\$135.00
1.0 x Chlorpyrifos + Wetter	4.34	L/ha	\$11.75 /L		\$51.00
				Total	\$340.57
Crop Management Sprays					
2.0 x G.A. + Wetter	0.22	kg/ha	\$840.0 /kg		\$364.62
1.0 x Cling Spray	0.43	L/ha	\$7.20 /L		\$3.13
				Total	\$367.74
Pruning					
1.0 x Hand Pruning	5.71	min/tree	\$14.00 /hr		\$1,053.3
0.3 x Mechanical Topping	1.19	hr/ha	\$105.0 /hr		\$37.60
0.3 x Hedging (one side)	1.41	hr/ha	\$105.0 /hr		\$37.03
0.5 x Mechanical Skirting	1.09	hr/ha	\$105.0 /hr		\$56.97
				Total	\$1,184.94
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
0.3 x Hand Fruit Thinning	10	min/tree	\$14.00 /hr		\$461
				Total	\$750.83
Tractor					
6.0 x Sod Mowing	0.87	hrs/ha	\$12.28 /hr		\$63.96
25.0 x Check Emitters	0.22	hrs/ha	\$3.00 /hr		\$16.28
1.0 x Herbicide Rows	2.17	hrs/ha	\$13.10 /hr		\$28.43
4.0 x Spot Spray	2.17	hrs/ha	\$3.00 /hr		\$26.04
2.0 x Ground Fertilise	1.63	hrs/ha	\$12.20 /hr		\$39.72
3.0 x OB Spray	3.26	hrs/ha	\$15.03 /hr		\$146.79
4.0 x Airblast Spray	2.17	hrs/ha	\$13.41 /hr		\$116.42
1.0 x Mulch Prunings	1.09	hrs/ha	\$12.70 /hr		\$13.78
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$64.50
				Total	\$515.92
Total Partial Variable Costs					\$3,652

Enterprise (per Ha): Washington Navels - High Density 2

Description: Sod culture, undertree sprinkler
 Location: Sunraysia
 Tree density: 1010 trees/ha
 Unit size 1 ha

7% NPV (no fin.) = \$23,289
 Inflation = 0%
 Harvest (Mandarin, Orange or Machine) = Orange

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use Ml/ha	0	4	5	6	6	7	7	8	9	10	10	10	10
Income													
Yield T/ha	0	0	0	4	12	21	31	42	42	42	42	42	42
Fruit Prices \$/T	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Total Income	\$0	\$0	\$0	\$1,360	\$4,079	\$7,478	\$10,877	\$14,700	\$14,700	\$14,700	\$14,700	\$14,700	\$14,700
Costs													
Yr 0 Site Preparation & Yr1 Planting	\$9,438	\$11,413											
Irrigation	\$491	\$629	\$663	\$702	\$702	\$773	\$773	\$845	\$916	\$987	\$987	\$987	\$987
Herbicide		\$74	\$74	\$74	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
Fertiliser		\$158	\$158	\$158	\$365	\$365	\$365	\$388	\$388	\$388	\$392	\$392	\$392
Fungicides		\$0	\$0	\$0	\$19	\$19	\$19	\$24	\$24	\$24	\$26	\$26	\$26
Insecticides		\$50	\$50	\$50	\$242	\$242	\$242	\$309	\$309	\$309	\$377	\$377	\$377
Crop Management Sprays		\$0	\$0	\$0	\$0	\$0	\$0	\$214	\$214	\$214	\$433	\$433	\$433
Pruning		\$118	\$118	\$118	\$118	\$118	\$118	\$538	\$538	\$538	\$812	\$812	\$812
Crop Management		\$0	\$0	\$0	\$290	\$290	\$290	\$290	\$290	\$290	\$702	\$702	\$702
Tractor		\$432	\$432	\$477	\$552	\$666	\$779	\$931	\$931	\$931	\$1,022	\$1,022	\$1,022
Contract Harvesting		\$0	\$0	\$249	\$746	\$1,367	\$1,989	\$2,688	\$2,688	\$2,688	\$2,688	\$2,688	\$2,688
Levies		\$0	\$0	\$28	\$85	\$156	\$227	\$307	\$307	\$307	\$307	\$307	\$307
Overhead & general costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Costs		\$12,874	\$1,495	\$1,856	\$3,269	\$4,146	\$4,953	\$6,685	\$6,756	\$6,827	\$7,896	\$7,896	\$7,896
ANNUAL CASH SURPLUS/DEFICIT	-\$9,929	-\$12,874	-\$1,495	-\$497	\$810	\$3,331	\$5,924	\$8,015	\$7,944	\$7,873	\$6,804	\$6,804	\$6,804
CUMULATIVE CASH FLOW (NO FINANCE)	-\$9,929	-\$22,803	-\$24,297	-\$24,794	-\$23,984	-\$20,653	-\$14,728	-\$6,713	\$1,231	\$9,104	\$15,908	\$49,928	\$83,949
Loan interest rate		10%											
Interest charge	-\$453	-\$2,270	-\$2,645	-\$3,066	-\$3,476	-\$3,760	-\$3,815	-\$3,687	-\$3,258	-\$2,794	-\$2,364	-\$42	\$0
CUMULATIVE CASH FLOW (After FINANCE)	-\$10,382	-\$25,526	-\$29,665	-\$33,228	-\$35,894	-\$36,323	-\$34,213	-\$29,885	-\$25,199	-\$20,121	-\$15,680	\$13,725	\$47,745

Enterprise Washington Navels - High Density 2 **Establishment & Planting**
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 1010 trees/ha

COSTS - Year 0

Land Preparation

1.0 x Removal of irrigation lines	8 /hrs/ha @	\$14.0 /hr	\$112.00
1.0 x Install irrigation lines	16 /hrs/ha @	\$14.0 /hr	\$224.00
1.0 x Removal of old trees	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Ripping	10 hrs/ha @	\$100.0 /hr	\$1,000.00
1.0 x Surveying		\$40.0 /ha	\$40.00
1.0 x Cultivating	3 hrs/ha @	\$11.7 /hr	\$35.10
1.0 x Discing	4 hrs/ha @	\$11.7 /hr	\$46.80
1.0 x Pegging - cnt. labour	@	\$80.0 /ha	\$80.00
1.0 x Wind breaks	@	\$200.0 /ha	\$200.00
1.0 x Sod culture (seed & contract sowing)	@	\$200.0 /ha	\$200.00
			Total \$2,938

Irrigation system

1.0 x Micro spray irrigation system (sprinkler, pipe etc)	\$6,500 /ha	\$6,500
		Total \$6,500

Total Costs - Land Preparation \$9,438

Planting - Added to year 1

1.0 x Trees	1010 tree @	\$9.00 /tree	\$9,090.00
1.0 x Planting	1010 tree @	\$1.00 /tree	\$1,010.00
1.0 x Tree guards	1010 each @	\$0.55 /each	\$555.50
1.0 x Dwarf buds	1010 bud @	\$0.25 /bud	\$252.50
1.0 x Contract budding	1010 tree @	\$0.50 /tree	\$505.00

Total Costs - Palnting (Yr 1) \$11,413

Enterprise Washington Navels - High Density 2
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 1010 trees/ha
Unit size 1 ha

YEAR : 1 to 3

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

Applications	Rate				
Herbicide	/app	/year			
6.0 x Glyphosate	2.55	L/ha	\$4.85 /L	\$74.28	<u>\$74.28</u>
					Total <u>\$74.28</u>
Fertiliser					
3.0 x Urea		0.22 T/ha	\$550 /T	\$121.00	
2.0 x ZM (foliar liquid)	12.8	L/ha	\$1.44 /L	\$36.86	
					Total <u>\$157.86</u>
Insecticides					
4.0 x Oil Spray		7 L/ha	\$1.78 /L	\$49.85	
					Total <u>\$49.85</u>
Pruning					
1.0 x Hand Pruning	0.5	min/tree	\$14.00 /hr	\$117.8	
					Total <u>\$117.83</u>
Tractor					
6.0 x Sod Mowing	1.02	hrs/ha	\$12.28 /hr	\$75.23	
25.0 x Check Emitters	0.26	hrs/ha	\$3.00 /hr	\$19.15	
0.0 x Herbicide Rows	2.55	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2.55	hrs/ha	\$3.00 /hr	\$45.95	
3.0 x Ground Fertilise	1.91	hrs/ha	\$12.20 /hr	\$70.07	
0.0 x OB Spray	3.83	hrs/ha	\$15.03 /hr	\$0.00	
6.0 x Airblast Spray	2.55	hrs/ha	\$13.41 /hr	\$205.39	
1.0 x Mulch Prunings	1.28	hrs/ha	\$12.70 /hr	\$16.21	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$2.27	
					Total <u>\$434.28</u>
					Total Partial Variable Costs <u>\$834</u>

Enterprise Washington Navels - High Density 2
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 1010 trees/ha
Unit size 1 ha

YEAR : 4 to 6

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate				
Herbicide	/app /year				
1.0 x Bromacil/Diuron	3.19	kg/ha	\$31.50 /kg	\$100.51	
4.0 x Glyphosate	2.55	L/ha	\$4.85 /L	\$49.52	
				Total	\$150.04
Fertiliser					
3.0 x Urea		0.32 T/ha	\$550 /T	\$176.00	
1.0 x Double Super		0.13 T/ha	\$540 /T	\$70.20	
1.0 x Muriate of Potash		0.13 T/ha	\$580 /T	\$75.40	
2.0 x ZM (foliar liquid)	15	L/ha	\$1.44 /L	\$43.32	
				Total	\$364.92
Fungicides					
1.0 x Copper Oxychloride	5.11	kg/ha	\$3.80 /kg	\$19.40	
				Total	\$19.40
Insecticides					
1.0 x Oil Spray	102	L/ha	\$1.78 /L	\$181.81	
1.0 x Chlorpyrifos + Wetter	5.11	L/ha	\$11.75 /L	\$59.99	
				Total	\$241.79
Pruning					
1.0 x Hand Pruning	0.5	min/tree	\$14.00 /hr	\$117.8	
				Total	\$117.83
Crop Management					
0.5 x Leaf Analysis	1	analysis	\$80.00 /analysis	\$40.00	
1.0 x Pest Monitoring	1		\$250.0 /ha	\$250.00	
				Total	\$290.00
Tractor					
6.0 x Sod Mowing	1.02	hrs/ha	\$12.28 /hr	\$75.23	
25.0 x Check Emitters	0.26	hrs/ha	\$3.00 /hr	\$19.15	
1.0 x Herbicide Rows	2.55	hrs/ha	\$13.10 /hr	\$33.44	
4.0 x Spot Spray	2.55	hrs/ha	\$3.00 /hr	\$30.63	
2.0 x Ground Fertilise	1.91	hrs/ha	\$12.20 /hr	\$46.72	
1.0 x OB Spray	3.83	hrs/ha	\$15.03 /hr	\$57.55	
4.0 x Airblast Spray	2.55	hrs/ha	\$13.41 /hr	\$136.93	
1.0 x Mulch Prunings	1.28	hrs/ha	\$12.70 /hr	\$16.21	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$37.50	
				Total	\$453.36
				Total Partial Variable Costs	\$1,637

Enterprise Washington Navels - High Density 2
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 1010 trees/ha
Unit size 1 ha

YEAR : 7 to 9

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate				
Herbicide	/app /year				
1.0 x Bromacil/Diuron	3.19	kg/ha	\$31.50 /kg		\$100.51
4.0 x Glyphosate	2.55	L/ha	\$4.85 /L		\$49.52
				Total	\$150.04
Fertiliser					
3.0 x Urea		0.32 T/ha	\$550 /T		\$173.96
1.0 x Double Super		0.15 T/ha	\$540 /T		\$78.83
1.0 x Muriate of Potash		0.17 T/ha	\$580 /T		\$98.78
1.0 x ZM (foliar liquid)	25.5	L/ha	\$1.44 /L		\$36.86
				Total	\$388.44
Fungicides					
1.0 x Copper Oxychloride	6.38	kg/ha	\$3.80 /kg		\$24.25
				Total	\$24.25
Insecticides					
1.0 x Oil Spray	102	L/ha	\$1.78 /L		\$181.81
1.0 x Bio Control (Aphytis)	0.5	release/ha	\$135 /release		\$67.50
1.0 x Chlorpyrifos + Wetter	5.11	L/ha	\$11.75 /L		\$59.99
				Total	\$309.29
Crop Management Sprays					
1.0 x G.A. + Wetter	0.26	kg/ha	\$840.0 /kg		\$214.43
				Total	\$214.43
Pruning					
1.0 x Hand Pruning	2	min/tree	\$14.0 /hr		\$471.3
0.5 x Mechanical Skirting	1.28	hr/ha	\$105.0 /hr		\$67.01
				Total	\$538.34
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
				Total	\$290.00
Tractor					
6.0 x Sod Mowing	1.02	hrs/ha	\$12.28 /hr		\$75.23
25.0 x Check Emitters	0.26	hrs/ha	\$3.00 /hr		\$19.15
1.0 x Herbicide Rows	2.55	hrs/ha	\$13.10 /hr		\$33.44
4.0 x Spot Spray	2.55	hrs/ha	\$3.00 /hr		\$30.63
2.0 x Ground Fertilise	1.91	hrs/ha	\$12.20 /hr		\$46.72
2.0 x OB Spray	3.83	hrs/ha	\$15.03 /hr		\$115.10
3.0 x Airblast Spray	2.55	hrs/ha	\$13.41 /hr		\$102.70
1.0 x Mulch Prunings	1.28	hrs/ha	\$12.70 /hr		\$16.21
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$73.71
				Total	\$512.89
				Total Partial Variable Costs	\$2,428

Enterprise Washington Navels - High Density 2
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 1010 trees/ha
Unit size 1 ha

YEAR : 10 to 20

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate				
Herbicide	/app /year				
1.0 x Bromacil/Diuron	3.19	kg/ha	\$31.50 /kg	\$100.51	
4.0 x Glyphosate	2.55	L/ha	\$4.85 /L	\$49.52	
				Total	<u>\$150.04</u>
Fertiliser					
3.0 x Urea		0.32 T/ha	\$550 /T	\$176.00	
1.0 x Double Super		0.15 T/ha	\$540 /T	\$81.00	
1.0 x Muriate of Potash		0.17 T/ha	\$580 /T	\$98.60	
1.0 x ZM (foliar liquid)	25.5	L/ha	\$1.44 /L	\$36.86	
				Total	<u>\$392.46</u>
Fungicides					
1.0 x Copper Oxychloride	6.76	kg/ha	\$3.80 /kg	\$25.71	
				Total	<u>\$25.71</u>
Insecticides					
1.0 x Oil Spray	102	L/ha	\$1.78 /L	\$181.81	
1.0 x Bio Control (Aphytis)	1	release/ha	\$135.0 /release	\$135.00	
1.0 x Chlorpyrifos + Wetter	5.11	L/ha	\$11.75 /L	\$59.99	
				Total	<u>\$376.79</u>
Crop Management Sprays					
2.0 x G.A. + Wetter	0.26	kg/ha	\$840.0 /kg	\$428.86	
1.0 x Cling Spray	0.51	L/ha	\$7.20 /L	\$3.68	
				Total	<u>\$432.54</u>
Pruning					
1.0 x Hand Pruning	3	min/tree	\$14.00 /hr	\$707.0	
0.2 x Mechanical Topping	1.4	hr/ha	\$105.0 /hr	\$29.48	
0.2 x Hedging (one side)	1.66	hr/ha	\$105.0 /hr	\$34.85	
0.3 x Mechanical Skirting	1.28	hr/ha	\$105.0 /hr	\$40.21	
				Total	<u>\$811.54</u>
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis	\$40.00	
1.0 x Pest Monitoring	1		\$250.0 /ha	\$250.00	
0.25 x Hand Fruit Thinning	7	min/tree	\$14.00 /hr	\$412.4	
				Total	<u>\$702.42</u>
Tractor					
6.0 x Sod Mowing	1.02	hrs/ha	\$12.28 /hr	\$75.23	
25.0 x Check Emitters	0.26	hrs/ha	\$3.00 /hr	\$19.15	
1.0 x Herbicide Rows	2.55	hrs/ha	\$13.10 /hr	\$33.44	
4.0 x Spot Spray	2.55	hrs/ha	\$3.00 /hr	\$30.63	
2.0 x Ground Fertilise	1.91	hrs/ha	\$12.20 /hr	\$46.72	
3.0 x OB Spray	3.83	hrs/ha	\$15.03 /hr	\$172.66	
4.0 x Airblast Spray	2.55	hrs/ha	\$13.41 /hr	\$136.93	
1.0 x Mulch Prunings	1.28	hrs/ha	\$12.70 /hr	\$16.21	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$73.71	
				Total	<u>\$604.67</u>
				Total Partial Variable Costs	<u>\$3,496</u>

Development Budget – Reworking

REWORKING BUDGET

Reworking is becoming a common practice for quickly changing existing orchards to a new variety. Techniques and cultural information about reworking are available at the NSW Agriculture Citrus website.

Yield, prices and variable inputs are a combination of current practices and best practice. The prices and yields used in the budgets are considered conservative at the time of publication. **Conduct your own investigations on yields, prices and variables inputs in your district and your individual management practices to obtain a more realistic budget projection.** The Excel spreadsheets used in the budgets are available from the NSW Agriculture citrus website. The excel spreadsheets available from the web are only a guide as they do not include a detailed analysis of overhead costs, fixed costs and taxation considerations. The spreadsheets from the web are also limited to their design constraints.

Assumptions

The basic assumptions for the budgets are the same as mentioned in the Development Budgets section apart from those as discussed as follows:

The reworking budget assumes that the irrigation systems is reused. When comparing reworking to a new development, the comparison is distorted because the development budget includes a new irrigation system. To make a more reliable comparison, the budget for the Navel development used in this reworking comparison will also assume that the irrigation system is reused. The Navel development budget used in the reworking comparison will include the costs for removing and installing the irrigation system and also some costs (\$400/ha) will be allocated for new fittings.

The budget assumes that Valencias are being reworked to Navel oranges. Only two crops of Valencia's from the half tree will be harvested in the reworking process.

The calendar of operations used in the initial stages of reworking budget are presented as follows. See year 0 for a costing of all of the operations.

Year 0:

1. Heavily hedging one side of the tree to within 50cm of the trunk.
2. Contract pruning to cleanup the tree to leave suitable limbs. Very large limbs are left in the row whilst small limbs are placed in the middle of the row.
3. Paint the exposed part of the trunk with white paint diluted to 40 parts paint to 60 parts water. The trees are spray painted using a home garden hand pump sprayer.
4. Contract mulching limbs within the row.
5. Labour to remove large limbs left behind within the row
6. Contract grafting on two limbs with two graft sticks used per limb. The contractor will manage the grafts until the protective bag is removed.
7. Pruning, training and topping the grafts.

Year 1:

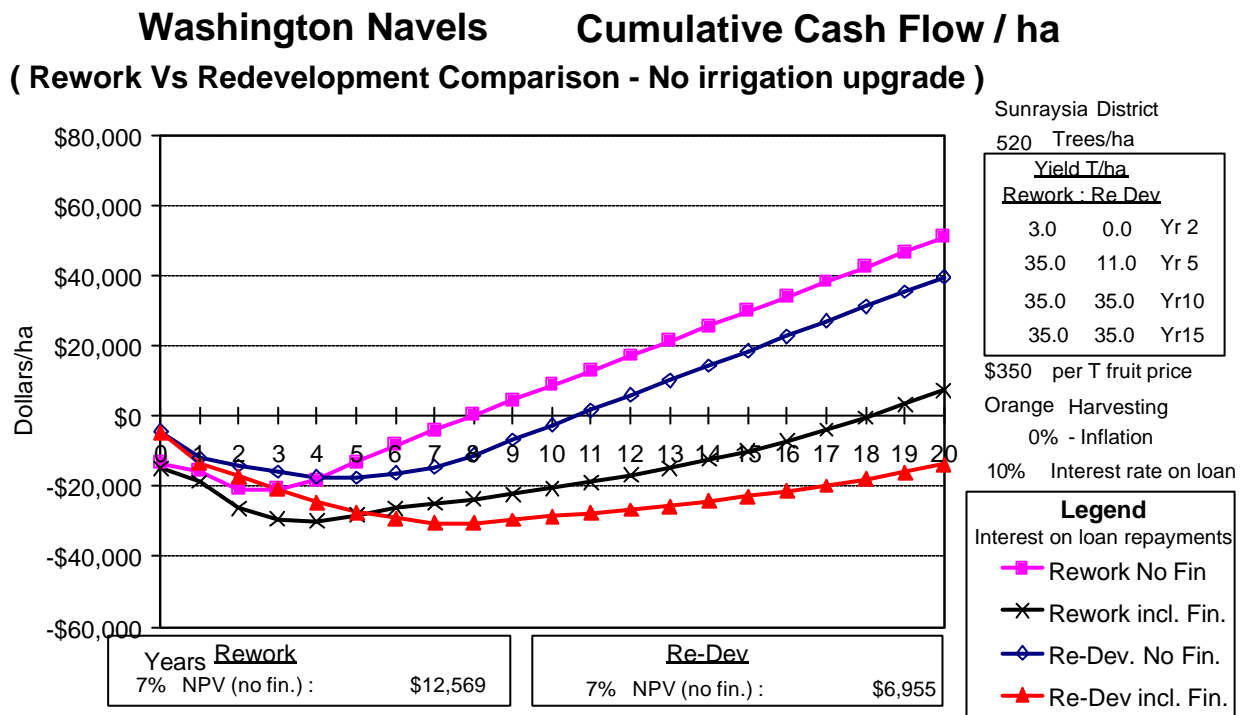
1. Pruning, training and topping the grafts

Year 2:

1. Pruning, training and topping the grafts.
2. Removing the other side of the tree. No harvest occurs of the removed side.
3. Painting limbs as in year 0.

4. Contract mulching limbs within the row.
5. Labour to remove large limbs left behind within the row.

The use of your own labour or machinery will increase the profitability of the reworking budget. When constructing your own reworking budget, carefully consider the time commitment for reworking that you will allocate for yourself. Do not over commit yourself with jobs that will either cause you to overspend your budget plan and/or result in a poorly managed reworking exercise.



Enterprise (per Ha): Washington Navels - Reworked

Description: Sod culture, undertree sprinkler
 Location: Sunraysia
 Tree density: 520 trees/ha
 Unit Size: 1 Hectare

7% NPV (no fin.) = \$12,569
 Loan interest = 10%
 Harvest (Mandarin, Orange or Machine) = Orange

Year	0	1	2	3	4	5	6	7	8	9	10	15	20
Water Use													
Water use Ml/ha	7	7	5	7	8	10	10	10	10	10	10	10	10
Income													
Yield T/ha	12.0	12.0	3.0	12.0	25.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Fruit Prices \$/T	\$180	\$180	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Total External Income	\$2,160	\$2,160	\$1,050	\$4,200	\$8,750	\$12,250	\$12,250	\$12,250	\$12,250	\$12,250	\$12,250	\$12,250	\$12,250
Costs													
Yr 0 Reworking & Yr2 Prune	\$12,567		\$2,718										
Irrigation	\$773	\$773	\$663	\$773	\$845	\$987	\$987	\$987	\$987	\$987	\$987	\$987	\$987
Herbicide	\$58	\$58	\$58	\$58	\$118	\$118	\$118	\$118	\$118	\$118	\$118	\$118	\$118
Fertiliser	\$106	\$190	\$190	\$190	\$314	\$314	\$314	\$307	\$307	\$307	\$318	\$318	\$318
Fungicides	\$0	\$0	\$0	\$0	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20
Insecticides	\$0	\$44	\$44	\$44	\$324	\$324	\$324	\$324	\$324	\$324	\$324	\$324	\$324
Crop Management Sprays	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$339	\$339	\$339	\$339	\$339	\$339
Pruning	\$0	\$971	\$971	\$971	\$971	\$971	\$971	\$1,099	\$1,099	\$1,099	\$1,099	\$1,099	\$1,099
Crop Management	\$0	\$0	\$0	\$0	\$290	\$290	\$290	\$593	\$593	\$593	\$593	\$593	\$593
Tractor	\$377	\$505	\$399	\$505	\$618	\$735	\$735	\$825	\$825	\$825	\$825	\$825	\$825
Contract Harvesting	\$768	\$768	\$192	\$768	\$1,600	\$2,240	\$2,240	\$2,240	\$2,240	\$2,240	\$2,240	\$2,240	\$2,240
Levies	\$88	\$88	\$22	\$88	\$183	\$256	\$256	\$256	\$256	\$256	\$256	\$256	\$256
Overhead & Fixed costs	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917	\$917
TOTAL COSTS	\$15,654	\$4,314	\$6,174	\$4,314	\$6,199	\$7,172	\$7,172	\$8,026	\$8,026	\$8,026	\$8,036	\$8,036	\$8,036
ANNUAL CASH SURPLUS/DEFICIT	-\$13,494	-\$2,154	-\$5,124	-\$114	\$2,551	\$5,078	\$5,078	\$4,224	\$4,224	\$4,224	\$4,214	\$4,214	\$4,214
CUMULATIVE CASH FLOW (NO FINANCE)	-\$13,494	-\$15,648	-\$20,772	-\$20,885	-\$18,335	-\$13,257	-\$8,179	-\$3,954	\$270	\$4,494	\$8,708	\$29,776	\$50,844
Loan interest rate	0%												
Interest charge	-\$1,341	-\$1,733	-\$2,375	-\$2,871	-\$3,233	-\$3,323	-\$3,147	-\$3,015	-\$2,894	-\$2,761	-\$2,615	-\$1,639	-\$234
CUMULATIVE CASH FLOW (After FINANCE)	-\$14,835	-\$18,721	-\$26,221	-\$29,206	-\$29,888	-\$28,133	-\$26,202	-\$24,992	-\$23,661	-\$22,197	-\$20,599	-\$9,863	\$7,261

Enterprise Washington Navels - Reworked **Yr0 & Yr2 Prune**

Description Sod culture, undertree sprinkler

Location Sunraysia

Tree density 520 trees/ha

Unit size 1 ha

COSTS - Year 0

Preparation & Reworking

1.0 x Hedging Heavy (one side)	8.0 hr/ha	@	\$105.00 /hr	\$840.0
1.0 x Contract Prune 2		@	\$2.50 /tree	\$1,300.0
1.0 x Painting stumps	2.5 min/tree	@	\$14.00 /hr	\$303.3
1.0 x White Paint	70 ml/tree		\$11.00 /L	\$400.4
1.0 x Mulching Contract	8 hr/ha	@	\$95.00 /hr	\$760.0
1.0 x Large limb removal	2.5 min/tree	@	\$14.00 /hr	\$303.3
1.0 x Reworking	520 tree	@	\$11.00 /tree	\$5,720.0
1.0 x Bud Sticks	2080 stick	@	\$0.75 /stick	\$1,560.0
1.0 x Graft Training	7 min/tree	@	\$14.00 /hr	\$849.3
			Total	\$12,036

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate		
Herbicide	/app	/year		
6.0 x Glyphosate		L/ha	4.85 /L	\$58.2
			Total	\$58.2

Fertiliser				
3.0 x Urea	0.11 T/ha		550 /T	\$60.5
1.0 x Double Super	0.03 T/ha		540 /T	\$16.2
2.0 x ZM (foliar liquid)		L/ha	1.4439 /L	\$28.9
			Total	\$105.6

Tractor				
6.0 x Sod Mowing	hrs/ha		12.28 /hr	\$58.9
25.0 x Check Emitters	hrs/ha		3 /hr	\$15.0
6.0 x Spot Spray	hrs/ha		3 /hr	\$36.0
4.0 x Ground Fertilise	hrs/ha		12.2 /hr	\$73.2
2.0 x Airblast Spray	hrs/ha		13.41 /hr	\$53.6
1.0 x Bin Placement	hrs/T		11.7 /hr	\$130.0
			Total	\$366.7

Total Costs - Yr0 Rework \$12,567

Removal of second half of tree - Added to year 2

1.0 x Contract Prune 3		@	\$3.00 /tree	\$1,560.0
1.0 x Painting stumps	1.9 min/tree	@	\$14.00 /hr	\$230.5
1.0 x White Paint	20 ml/tree		\$11.00 /L	\$114.4
1.0 x Mulching Contract	6 hr/ha	@	\$95.00 /hr	\$570.0
1.0 x Large limb removal	2 min/tree	@	\$14.00 /hr	\$242.7

Total Costs - Yr2 Prune \$2,718

Enterprise Washington Navels - Reworked
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 520 trees/ha
Unit size 1 ha

YEAR : 1 to 3

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
6.0 x Glyphosate	2	L/ha	\$4.85 /L	\$58.20	
				Total	\$58.20
Fertiliser					
3.0 x Urea		0.17 T/ha	\$550 /T	\$93.50	
1.0 x Double Super		0.04 T/ha	\$540 /T	\$21.60	
1.0 x Muriate of Potash		0.08 T/ha	\$580 /T	\$46.40	
2.0 x ZM (foliar liquid)	10	L/ha	\$1.44 /L	\$28.88	
				Total	\$190.38
Insecticides					
3.0 x Oil Spray	7	L/ha	\$1.78 /L	\$37.39	
0.6 x Pirimicarb	0.2	kg/ha	\$54.00 /kg	\$6.48	
				Total	\$43.87
Pruning					
1.0 x Hand Pruning	8	min/tree	\$14.00 /hr	\$970.7	
				Total	\$970.67
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr	\$58.94	
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr	\$15.00	
0.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr	\$0.00	
6.0 x Spot Spray	2	hrs/ha	\$3.00 /hr	\$36.00	
5.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr	\$91.50	
0.0 x OB Spray	3	hrs/ha	\$15.03 /hr	\$0.00	
5.6 x Airblast Spray	2	hrs/ha	\$13.41 /hr	\$150.19	
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr	\$12.70	
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr	\$15.80	
				Total	\$380.13
				Total Partial Variable Costs	\$1,643

Enterprise Washington Navels - Reworked
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 520 trees/ha
Unit size 1 ha

YEAR : 4 to 6

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate /app	Rate /year			
Herbicide					
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.07 T/ha	\$540 /T		\$37.80
1.0 x Muriate of Potash		0.13 T/ha	\$580 /T		\$75.40
2.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$57.76
				Total	\$313.96
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$3.80 /kg		\$20.14
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Bio Control (Aphytis)	1	release/ha	\$135.0 /release		\$135.00
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$47.00
				Total	\$324.44
Pruning					
1.0 x Hand Pruning	8	min/tree	\$14.00 /hr		\$970.7
				Total	\$970.67
Crop Management					
0.5 x Leaf Analysis	1	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
				Total	\$290.00
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
1.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$45.09
4.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$107.28
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$55.58
				Total	\$381.39
Total Partial Variable Costs					\$2,418

Enterprise Washington Navels - Reworked
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 520 trees/ha
Unit size 1 ha

YEAR : 7 to 9

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
	/app	/year			
Herbicide					
1.0 x Bromacil/Diuron	2.5		kg/ha	\$31.50 /kg	\$78.75
4.0 x Glyphosate	2		L/ha	\$4.85 /L	\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26	T/ha	\$550 /T	\$143.00
1.0 x Double Super		0.10	T/ha	\$540 /T	\$54.00
1.0 x Muriate of Potash		0.14	T/ha	\$580 /T	\$81.20
1.0 x ZM (foliar liquid)	20		L/ha	\$1.44 /L	\$28.88
				Total	\$307.08
Fungicides					
1.0 x Copper Oxychloride	5.3		kg/ha	\$3.80 /kg	\$20.14
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80		L/ha	\$1.78 /L	\$142.44
1.0 x Bio Control (Aphytis)	1		release/h	\$135.0 /release	\$135.00
1.0 x Chlorpyrifos + Wetter	4		L/ha	\$11.75 /L	\$47.00
				Total	\$324.44
Crop Management Sprays					
2.0 x G.A. + Wetter	0.2		kg/ha	\$840 /kg	\$336.00
1.0 x Cling Spray	0.4		L/ha	\$7 /L	\$2.88
				Total	\$338.88
Pruning					
1.0 x Hand Pruning	8		min/tree	\$14.00 /hr	\$970.7
0.3 x Mechanical Topping	1.1		hr/ha	\$105.00 /hr	\$34.7
0.3 x Hedging (one side)	1.3		hr/ha	\$105.00 /hr	\$41.0
0.5 x Mechanical Skirting	1		hr/ha	\$105.0 /hr	\$52.50
				Total	\$1,098.77
Crop Management					
1.0 x Leaf Analysis	0.5		analysis	\$80.0 /analysis	\$40.00
0.3 x Hand Fruit Thinning	10		min/tree	\$14.0 /hr	\$303.33
1.0 x Pest Monitoring	1			\$250.0 /ha	\$250.00
				Total	\$593.33
Tractor					
6.0 x Sod Mowing	0.8		hrs/ha	\$12.28 /hr	\$58.94
25.0 x Check Emitters	0.2		hrs/ha	\$3.00 /hr	\$15.00
1.0 x Herbicide Rows	2		hrs/ha	\$13.10 /hr	\$26.20
4.0 x Spot Spray	2		hrs/ha	\$3.00 /hr	\$24.00
2.0 x Ground Fertilise	1.5		hrs/ha	\$12.20 /hr	\$36.60
3.0 x OB Spray	3		hrs/ha	\$15.03 /hr	\$135.27
4.0 x Airblast Spray	2		hrs/ha	\$13.41 /hr	\$107.28
1.0 x Mulch Prunings	1		hrs/ha	\$12.70 /hr	\$12.70
1.0 x Bin Placement	0.15		hrs/T	\$11.70 /hr	\$61.43
				Total	\$477.42
Total Partial Variable Costs					\$3,278

Enterprise Washington Navels - Reworked
Description Sod culture, undertree sprinkler
Location Sunraysia
Tree density 520 trees/ha
Unit size 1 ha

YEAR:10 to 20

PARTIAL VARIABLE COSTS (excluding irrigation & harvest costs)

	Rate	Rate			
Herbicide	/app	/year			
1.0 x Bromacil/Diuron	2.5	kg/ha	\$31.50 /kg		\$78.75
4.0 x Glyphosate	2	L/ha	\$4.85 /L		\$38.80
				Total	\$117.55
Fertiliser					
3.0 x Urea		0.26 T/ha	\$550 /T		\$143.00
1.0 x Double Super		0.12 T/ha	\$540 /T		\$64.80
1.0 x Muriate of Potash		0.14 T/ha	\$580 /T		\$81.20
1.0 x ZM (foliar liquid)	20	L/ha	\$1.44 /L		\$28.88
				Total	\$317.88
Fungicides					
1.0 x Copper Oxychloride	5.3	kg/ha	\$3.80 /kg		\$20.14
				Total	\$20.14
Insecticides					
1.0 x Oil Spray	80	L/ha	\$1.78 /L		\$142.44
1.0 x Bio Control (Aphytis)	1	release/ha	\$135.0 /release		\$135.00
1.0 x Chlorpyrifos + Wetter	4	L/ha	\$11.75 /L		\$47.00
				Total	\$324.44
Crop Management Sprays					
2.0 x G.A. + Wetter	0.2	kg/ha	\$840 /kg		\$336.00
1.0 x Cling Spray	0.4	L/ha	\$7.20 /L		\$2.88
				Total	\$338.88
Pruning					
1.0 x Hand Pruning	8	min/tree	\$14.00 /hr		\$970.7
0.3 x Mechanical Topping	1.1	hr/ha	\$105.0 /hr		\$34.65
0.3 x Hedging (one side)	1.3	hr/ha	\$105.0 /hr		\$40.95
0.5 x Mechanical Skirting	1	hr/ha	\$105.0 /hr		\$52.50
				Total	\$1,098.77
Crop Management					
1.0 x Leaf Analysis	0.5	analysis	\$80.00 /analysis		\$40.00
1.0 x Pest Monitoring	1		\$250.0 /ha		\$250.00
0.25 x Hand Fruit Thinning	10	min/tree	\$14.00 /hr		\$303.3
				Total	\$593.33
Tractor					
6.0 x Sod Mowing	0.8	hrs/ha	\$12.28 /hr		\$58.94
25.0 x Check Emitters	0.2	hrs/ha	\$3.00 /hr		\$15.00
1.0 x Herbicide Rows	2	hrs/ha	\$13.10 /hr		\$26.20
4.0 x Spot Spray	2	hrs/ha	\$3.00 /hr		\$24.00
2.0 x Ground Fertilise	1.5	hrs/ha	\$12.20 /hr		\$36.60
3.0 x OB Spray	3	hrs/ha	\$15.03 /hr		\$135.27
4.0 x Airblast Spray	2	hrs/ha	\$13.41 /hr		\$107.28
1.0 x Mulch Prunings	1	hrs/ha	\$12.70 /hr		\$12.70
1.0 x Bin Placement	0.15	hrs/T	\$11.70 /hr		\$61.43
				Total	\$477.42
Total Partial Variable Costs					\$3,288

APPENDICES

APPENDIX 1: WATER COSTS

The water prices are sourced from Murrumbidgee Irrigation and Western Murray Irrigation. This information can also be sourced in the Water and pumping costs fact sheet at the NSW Agriculture Farm Business & Trade Web site.

1. WATER PRICES

A) MURRUMBIDGEE VALLEY (2001/2) - High security allocation

Fixed water costs based on a 15 ha orchard @ 12ML/ha allocation

- administrative/service fee	\$285.00 /farm	= \$19.00/ha
- envirowise	\$145.19 /farm	= \$ 9.68/ha
- outlet fee - large wheel	\$ 65.00 /wheel	= \$ 4.33/ha
- high security allocation fee	\$ 8.72/ML	= \$104.64/ha
- envirowise allocation fee	\$ 0.51/ML	= \$6.12/ha
	Fixed charge	= \$ 143.77/ha

Variable water costs (i.e. related to volume of water used)

Water Usage Charge	\$ 23.34/ML
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B) COOMEALLA IRRIGATION AREA - WATER PRICE (2002/3)

Variable water costs (i.e. related to volume of water used)

Water use charge *	\$37.00/ML	
Variable Government	\$1.39/ML	
Total Variable Water Distribution Charge		\$ 38.39/ML

* A minimum standing water charge of 42% of the allocation (14ML/ha) is charged for Coomealla users (i.e. all water use below 7ML/ha will be charged at the 7ML/ha rate).

Fixed Water Costs based on 14.16 ML/ha allocation:

- sinking fund contribution	\$ 7.52 / Allocation	= \$ 105.28/ha
- joint venture repayment	\$ 8.24 / Allocation	= \$ 115.36/ha
- fixed government	\$ 3.70 / Allocation	= \$ 51.80/ha
- NSWIC	\$ 0.08 / Allocation	= \$ 1.12/ha
	Fixed charge	= \$ 273.56/ha

2. IRRIGATION SYSTEMS AND PUMPING COSTS FOR THE RIVERINA

This information is sourced from the NSW Agriculture Farm Business & Trade Web site – Pumping Costs (Southern NSW).

The most common watering system used in the Riverina for Citrus is Flood irrigation. Other methods of watering include the use of micro-systems, drip and overhead sprinklers.

Sources of water include the river system, bores, channels and on-farm storages. The main sources of energy for pumping are diesel and electricity.

Diesel

The on-farm cost of diesel is 45.00¢/L. This figure is derived from a bowser price of 83.12 ¢/L less a federal rebate of 38.12¢/L (NSW Agriculture, Feb 2001).

Electricity (Murrumbidgee example)

The MIA and surrounding areas are served by Great Southern Energy. A concessional tariff is available and applicable only to Irrigation Pumps.

Irrigation Time-of-use Tariff

	¢/kWh
Peak charge (7 am to 10 pm on working weekdays)	12.54
Off-peak charge (10 pm to 7 am plus weekends)	8.05

The average electricity charge is calculated assuming the pump is used 24 hours on weekdays only.

	¢/kWh
15 hours @12.54¢/kWh	188.10
9 hours @8.05 ¢/kWh	72.45
Total	<u>260.55</u>
Average charge	10.86

An average rate of 10.86¢/kWh is used for the calculations.

The installation of an electric powered pump involves the capital cost of power line extension and the cost of installing the required metering equipment, as opposed to virtually no installation costs for a diesel powered pump. However, in many cases, an electric powered pump costs less to run with respect to energy costs and repairs/maintenance than does a diesel powered pump.

Calculating pump power and energy requirements

The following methods can be used to determine pump power and energy requirements:

$$\text{Gross power = required (kW)} = \frac{\text{Flow rate (litres/sec) x total head (metres)}}{102 \times \text{pump efficiency (decimal) x derating (decimal)}}$$

Total head at the pump includes suction lift, static lift, pressure delivered (eg. Sprinkler irrigation) and friction losses.

Most large pumps operate at efficiencies within the range of 75 to 85 per cent when new. A pump efficiency of 80 per cent is used for the calculations.

Derating accounts for efficiency losses between the energy required at the pump shaft and the total energy required. A derating factor of 80 per cent for electric motors which includes a power factor, and 75 per cent for diesel engines is used.

For diesel units it is assumed that 0.34 litres of fuel will be consumed per hour per kilowatt. Therefore, a diesel motor needing to generate 50 kilowatts of power would consume 17 litres of diesel per hour.

Examples of pumping costs

1. Sprinkler irrigation from channel

Assume a sprinkler irrigation lateral with an average output of 90 litres per second and a ~ pressure at the start of the lateral of 250 kPa (25.5 metres). Assume also that friction loss in the mainline and pump is 5 metres and that the water is being lifted 2.5 metres (ignoring velocity per second it takes 3.09 hours to pump one megalitre).

$$\begin{aligned} \text{Gross electric power} &= \frac{90\text{L/sec} \times 33\text{m}}{102 \times 0.80 \times 0.80} \\ &= 45.5 \text{ Kw} \end{aligned}$$

$$\begin{aligned} \text{Cost per hour is } 10.86 \text{ ¢/kWh} \times 45.5\text{kW} \\ &= \$4.94 \end{aligned}$$

$$\begin{aligned} \text{Cost per megalitre is } \$4.94/\text{hr} + 3.09\text{hr/ML} \\ &= \$15.27 \end{aligned}$$

$$\begin{aligned} \text{Gross diesel power} &= \frac{90\text{L/sec} \times 33\text{m}}{102 \times 0.80 \times 0.75} \\ &= 48.5 \text{ Kw} \end{aligned}$$

$$\begin{aligned} \text{Hourly fuel use is } 48.5\text{kW} \times 0.34\text{L/hr/Kw} \\ &= 16.49 \text{ L/h} \end{aligned}$$

$$\begin{aligned} \text{Cost per hour is } 45.00 \text{ ¢/L} \times 16.49\text{L/hr} \\ &= \$7.42/\text{hr} \end{aligned}$$

$$\begin{aligned} \text{Cost per megalitre is } \$7.42/\text{hr} \times 3.09\text{ML/hr} \\ &= \$22.93/\text{ML} \end{aligned}$$

2. Pumping from bores (flood irrigation)

Pumping from bores is relatively costly compared to pumping similar quantities of water from supplies near the surface. Bore pumping costs will vary significantly for different draw-down depths and pump column friction losses. Assume a bore lifting from a draw-down of 34 metres with a friction loss of one metre. Total head at the pump is: 34 + 1 = 35 metres. With a flow rate of 90 litres per second, it takes 3.09 hours to pump one megalitre.

$$\begin{aligned} \text{Gross electric power} &= \frac{90\text{L/sec} \times 35\text{m}}{102 \times 0.80 \times 0.80} \\ &= 48.3\text{Kw} \end{aligned}$$

$$= 48.3\text{Kw}$$

$$\begin{aligned} \text{Cost per hours is } 10.86\text{¢/kWh} \times 48.3\text{kW} \\ &= \$5.25 \end{aligned}$$

$$\begin{aligned} \text{Cost per megalitre is } \$5.25/\text{hr} \times 3.09\text{hr/ML} \\ &= \$16.21 \end{aligned}$$

$$\begin{aligned} \text{Gross diesel power} &= \frac{90\text{L/sec} \times 35\text{m}}{102 \times 0.80 \times 0.80} \\ &= 51.5 \text{ Kw} \end{aligned}$$

$$\begin{aligned} \text{Hourly fuel use is } 51.5\text{kW} \times 0.34\text{L/hr/kW} \\ &= 17.51 \text{ L/h} \end{aligned}$$

$$\begin{aligned} \text{Cost per hour is } 45.00\text{¢/L} \times 17.51\text{L/hr} \\ &= \$7.88/\text{hr} \end{aligned}$$

$$\begin{aligned} \text{Cost per megalitre is } \$7.88/\text{hr} \times 3.09\text{ML/hr} \\ &= \$24.35/\text{ML} \end{aligned}$$

APPENDIX 2: TRACTOR OPERATING COSTS

This information is sourced from the NSW Agriculture Farm Enterprise Budget – Machinery Costs (NSW Agriculture Farm Business & Trade Web site).

Example tractor: CASE MX 90C (86HP), mechanical front drive

New price: \$80,000

Note: Overhead costs (eg depreciation, insurance) are not included.

VARIABLE COSTS:

Tractor Variable Costs

Item	No.	Cost	Use	Variable Costs Summary
Diesel fuel		\$0.45/L	15 L/hr	FUEL: \$6.75/hr
Engine oil		\$2.7/L	10L/250hrs	
Transmission oil		\$2.7/L	100L/1200hrs	OIL: \$0.38/hr
Air filter - inner	1	\$77/filter	1500 hrs/filter	
Air filter - outer	1	\$58/filter	1500 hrs/filter	
Rear cab filter	2	\$20/filter	1500 hrs/filter	
Fuel filter	1	\$16/filter	500 hrs/filter	
Hydraulic oil filter	1	\$35/filter	750 hrs/filter	
Oil filter	1	\$8/filter	250 hrs/filter	
Transmission oil filter	1	\$12/filter	750 hrs/filter	FILTERS: \$0.24/hr
Tyres - large	2	\$950/tyre	3500 hrs/tyre	
Tyres - small	2	\$500/tyre	3500 hrs/tyre	TYRES: \$0.83/hr
Tubes - large	2	\$80/tube	6000 hrs/tube	
Tubes - small	2	\$20/tube	6000 hrs/tube	TUBES: \$0.03/hr
Batteries	2	\$200/battery	3 yrs/battery	BATTERIES: \$0.27/hr
Repairs			2% tractor price/yr	REPAIRS: \$3.20/hr

Total Tractor Variable Costs: \$11.70/hr

APPENDIX 3: IMPLEMENTS OPERATING COSTS

All implement costs are based on percentages of new price. Percentages are based on amount of use and the complexity of the implement. Operating costs include all labour and parts for repairs and general maintenance. Hours used is based on a 30 ha citrus orchard. The costs are based on communication with growers and machinery operators.

Airblast Spray unit – 2000L

New price: \$15,000 Percentage annual maintenance cost of new price: 5%
Annual maintenance cost: \$750 Hours used per year: 350
Operating cost/hr usage: **\$2.14**

Sod Mowing – Slasher

New price: \$2,300 Percentage annual maintenance cost of new price: 5%
Annual maintenance cost: \$115 Hours used per year: 200
Operating cost/hr usage: **\$0.58**

Four Wheel Bike & Spray Unit

New price: \$12,000 Percentage annual maintenance cost of new price: 5%
Annual maintenance cost: \$600 Hours used per year: 300 Fuel per hour :\$1
Operating cost/hr usage: **\$3.00**

Fertiliser Spreader

New price: \$1,200 Percentage annual maintenance cost of new price: 5%
Annual maintenance cost: \$60 Hours used per year: 120
Operating cost/hr usage: **\$0.50**

Oscillating Boom

New price: \$25,000 Percentage annual maintenance cost of new price: 2%
Annual maintenance cost: \$500 Hours used per year: 150
Operating cost/hr usage: **\$3.33**

Mulcher

New price: \$6,000 Percentage annual maintenance cost of new price: 1%
Annual maintenance cost: \$60 Hours used per year: 60
Operating cost/hr usage: **\$1.00**

Herbicide Spray Boom

New price: \$ 2,800 Percentage annual maintenance cost of new price: 3%
Annual maintenance cost: \$84 Hours used per year: 60
Operating cost/hr usage: **\$1.40**

Cultivator

New price: \$1200 Percentage annual maintenance cost of new price: 5%
Annual maintenance cost: \$60 Hours used per year: 60
Operating cost/hr usage: **\$1.00**