



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Growing lemons in Australia- a production manual - Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:

<http://www.dpi.nsw.gov.au/agriculture/horticulture/citrus/lemon-manual>

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Photo by Greg Moulds

INTRODUCTION

Gross margins give an insight into the production costs, yields and predicted likely returns for a particular crop enterprise. They should, however, be treated with caution because enterprise location and management and marketing options and returns are extremely variable between different growers and different growing regions.

For example the detailed gross margins included here for the Central Coast of NSW reflect the high pest and disease pressures of a coastal climate. They also reflect the local marketing situation where most growers sell their fruit in bulk to a centralised packing facility for sale largely on the domestic market.

In order to more accurately predict the likely costs and returns for growing lemons you need to incorporate the impact of local regional growing conditions on management costs as well as factoring in where and how you will market your fruit.

On the domestic market the highest returns for lemons are received between November and March. Prices at this time are between \$20-35/carton.

The lowest prices are received for the main winter crop between June and August. Prices at this time are between \$10-12/carton.

Gross Margins

Enterprise		LEMONS (Standard Density Planting)		
Description		Microjet, sod culture	Year: 2003	
Location		Central Coast, NSW, Australia		
GROSS MARGIN BUDGET:			1 ha	Standard Budget
Budget				
INCOME:				
		25 t/ha	@	\$200 /T
				\$5,000
		A. Total Income/ha		\$5,000
VARIABLE COSTS:				
<i>Irrigation</i>				
	Power	0.5 ML/ha		\$13.00 /ML
	Maintenance (pump & system)	0.5 ML/ha		\$10.00 /ML
				\$6.50
				\$5.00
<i>Fertiliser</i>				
	3 x Urea	0.12 T/ha		\$585 /T
	1 x Triple Super	0.16 T/ha		\$520 /T
	1 x Muriate of Potash	0.04 T/ha		\$525 /T
				\$210.60
				\$83.20
				\$21.00
<i>Insect Control</i>				
	1 x Oil Spray (1%)	20.0 L/ha		\$2.44 /L
	1 x Maldison	3.8 L/ha		\$8.75 /L
	1 x Maldison Bait Spray	0.75 L/ha		\$8.75 /L
	1 x Yeast autolysate Bait Spray	1.2 L/ha		\$10.00 /L
				\$48.78
				\$32.81
				\$6.56
				\$12.00
<i>Disease Control</i>				
	3 x Cuprous Oxide	2.25 kg/ha		\$7.00 /kg
				\$47.25
<i>Weed Control</i>				
	1 x Bromacil/Diuron	2.5 kg/ha		\$39.00 /kg
	2 x Glyphosate (spot spraying)	2.5 L/ha		\$6.75 /L
				\$97.50
				\$33.75
<i>Crop Management</i>				
	1 x Hand Pruning	10 min/tree		\$14.00 /hr
				\$816.67
<i>Tractor costs</i>				
	6 x Sod mowing	0.5 hr/ha		\$12.28 /hr
	4 x Check Emitters	0.2 hr/ha		\$3.00 /hr
	1 x Herbicide	2.0 hr/ha		\$13.10 /hr
	2 x Spot Spray	2.0 hr/ha		\$11.70 /hr
	5 x Fertiliser	1.0 hr/ha		\$12.20 /hr
	4 x Air blast Spray	2.0 hr/ha		\$13.41 /hr
	1 x Oscillating boom Spray	3.0 hr/ha		\$15.03 /hr
	1 x Mulch Prunings	1.0 hr/ha		\$12.70 /hr
	1 x Bait spray	1.0 hr/ha		\$11.70 /hr
				\$36.84
				\$2.40
				\$26.20
				\$46.80
				\$61.00
				\$107.28
				\$45.09
				\$12.70
				\$11.70
<i>Harvest</i>				
	Picking (multiple selective)	20 min/tree		\$14.50 /hr
	Cartage	25 t/ha		\$4.00 /T
	Levies	25 t/ha		\$3.25 /T
				\$1,691.67
				\$100.00
				\$81.25
				\$3,644.55
				\$1,355.45

Enterprise **LEMONS - (Standard Density Planting)**
Description Microjet, 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.

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

Gross Margins

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

GROSS MARGIN BUDGET: **1 ha** Standard 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
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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)**
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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

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

Extracted from: Falivene, S. Farm Budget Handbook 2003 NSW Citrus. NSW Agriculture 2003.

OTHER GROSS MARGINS

Predicted gross margin for 8 year old lemons at Katherine, Northern Territory

- Assumes average yield of 57t/ha (150kg/tree at 380 trees/ha);
- Assumes a return of \$1.50/kg;
- Assumes harvesting season from January -August when domestic market prices are high.

Item	\$	*Field Costs	(% of total) field costs
Income	85,500	Fertiliser	41
Variable costs		Weed control	9
Field Costs*	3,513	Slashing	2
Picking & Packing	20,320	Pest/Disease control	21
Freight	17,955	Irrigation	13
Commission	10,260	Pruning	10
		Sundries	4
Total Variable Costs	52,048		
Gross margin	33,452		

Extracted from "Economic Assessment of Tropical Lemon and Lime Production in the Katherine and Darwin Region". H. Ngo. DPIF. October 1998.

Gross margin (per ha) analysis for lemons in New Zealand (NZ dollars)

Item	\$	% of total
Income	13,903	
Expenditure:		
Fertilisers	375	6.7
Mowing	153	2.7
Herbicide	166	3.0
P & D control	824	14.6
Skirting & Pruning	452	8.0
Picking	1,304	23.2
Packing	1,613	28.7
Commission	310	5.5
Freight	339	6.0
Levies	93	1.6
Total Variable Costs	5,626	
Gross Margin	8,277	

Extracted from "Growing Citrus in New Zealand : A Practical Guide". Produced by NZ Citrus Growers Inc. 1997.