



# **Establishment & Production Costs for Grapes in Ontario 2009 Economic Report**



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## **Editors**

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# 1. Introduction

This report tries to reflect the management practices used by growers today. Soil condition, cultivar selections, personal grower management decisions and the unique meso-climates of Ontario result in many different grower practices in training systems, pest management programs and fertilizer rates.

The four grape cultivars in this document are the same as those used four years ago. Concord, Vidal, Chardonnay and Cabernet Franc reflect some of the most significant cultivars in Ontario. They represent Labrusca, French Hybrid and Vinifera types of grapes.

## Objectives

The grape industry utilizes the cost of establishment and cost of production models extensively to determine the profitability of the industry and to help growers make business decisions and planting plans. Growers can use the input costs as general guidelines to help identify strengths and weaknesses in their business.

## Methods and procedures

The information used in this report is derived from previous economic reports, surveys with growers and private consultants, and data from researchers, extensions and agribusiness.

Input costs are organized into variable and measurable fixed costs. Variable costs include plants, seed, fertilizers, pesticides, marketing charges, hired labour, tractor and machine costs and interest on operating capital.

Measurable fixed costs are interest on investment, depreciation and other overhead cost items such as a portion of utilities, equipment storage, insurance, accounting, farm vehicles and general maintenance.

## Assumptions

The contribution margin is obtained by subtracting the total variable costs from the gross income. Contribution margin is the amount of funds that the crop contributes to cover fixed costs and provide returns for owner management and investment.

Hired Labour is charged at \$12.40 per hour, which includes benefits (Workers' Compensation, Employment Insurance and Canada Pension Plan). A blended base price of \$12.40 is used to reflect the workforce in the grape industry, which is made up of both local and off-shore labour. Offshore labour includes an allowance for additional costs such as air flight, housing, local transportation.

Hired machine operator labour is charged at \$ 17.20 per hour (includes benefits).

Machinery and equipment costs are based on a commercial farm size of 50 acres.

Machinery costs are calculated based on the purchase price for 2009, useful life, annual use and trade-in value.

Interest on investment is calculated at 2.0 %, which is the average interest rate paid by chartered banks on Guaranteed Investment Certificates.

The interest rate applied to the operating capital is based on the prime lending rate of 2.25 % plus 1.0% = 3.25%.

Interest on operating capital is compounded annually until the vineyard generates revenue to first pay down the accumulated interest and then the outstanding principal. Operating capital includes cost of materials, fuel, repairs, labour and other cash items but does not include farm overhead expenses.

Fuel costs are based on the size of each tractor, truck or self-propelled machine used in production. The following farm-gate fuel prices are used: gasoline 92.0 cents/litre and diesel 75.0 cents/litre. Fuel costs are net of all 2009 provincial and federal rebates.

Yields are given as both a low and high range to reflect the wide differences of commercial production and conditions for each farm.

Yields used are 25% of annual yield for year 3 and 50% for year 4 (high range).

The prices listed are the 2009 payments for each cultivar sold through the Ontario Grape Growers Marketing Board.

Chardonnay and Cabernet Franc vines are spaced at 9 x 4 feet and 1210 vines per acre. 1 acre = 9 rows with approximately 134 vines per row.

Vidal vines are spaced at 9 x 5 feet and 968 vines per acre. 1 acre = 9 rows with approximately 108 vines per row.

Labrusca vines are spaced at 10 x 6 feet and 728 vines per acre. 1 acre = 8 rows with approximately 91 vines per row.

The training system for Vinifera grapes is a vertical shoot position system (i.e. Pendelbogen), while Labrusca and French Hybrid grapes are trained to four-cane kniffin.

The establishment of the vineyard covers a 4.5 year period: a half-year for pre-plant preparation, one year for planting and three years for the vine to grow to full cropping potential.

Crop Services includes several items such as petiole and soil sampling, pest monitoring, etc.

The establishment costs will need to be recovered over the productive life of the vineyard. An estimate of the annual costs to recover establishment costs is included in the Total Establishment Costs section for each variety. They are amortized over the 21 years of full production at a rate of interest of 2.0%.

Due to rounding, figures may not add to the total shown.

### **Changes for the 2009 Economic Report**

Costs continue to rise faster than gross revenues. Hand labour wages rose 14% while skilled tractor driver wages climbed 21% since 2005. Gross revenue per tonne actually declined 1.5% since 2005.

Wind Machines for minimizing spring/fall frosts and winter injury are included for the first time in the cost of production.

Additional operations: shoot thinning, shoot positioning, tucking, leaf removal, are added to the operations to include more detail to the canopy management.

Other minor changes include – using less fertilizer, extra mowing in the vineyard, and one additional spray in the vineyard.

Land costs and carrying charges are not included as part of the establishment or production costs because of the extreme variance in land prices.

Land ownership and rental prices vary considerably from farm to farm depending on road location, services, soil types, access to water, and potential for urban development or establishing a new winery. For this reason a space is provided to insert land rental cost in the variable cost section and land ownership in the fixed cost section. Costs should be added into vineyard establishment and cost of production.

A management allowance is not included as a cost.

All labour costs are charged to the project whether the owner performs the task or whether it was hired out.

Two additional tables have been added in the report; “The Breakeven Yield to cover variable costs” and “The Breakeven Yield to cover all costs”.

These assumptions reflect the current practices in the industry and do not necessarily represent recommendations from the contributors. Newer plantings of these varieties may involve higher vine densities, alternative training systems and other innovative cultural practices.

*The authors assume no liability or responsibility as a result of the reader relying or acting upon the information contained herein. Any use or misuse of the information is the sole responsibility of the reader.*

# VINIFERA AND HYBRID GRAPES



## 2. Cabernet Franc

### Preplant Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Machinery operator, 4.2 hrs		72
Custom Plowing		23
Cover Crop		46
Machine Costs :Repairs and maintenance		33
Fuel		36
Consulting Fees		32
Interest on operating capital		65
Land rental		
Land Preparation (levelling etc.)		850
Tile Drainage		2918
<b>Total Variable Costs</b>		<b>4075</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		59
Interest on investment		13
Other overhead		107
Land ownership		
<b>Measurable Fixed Costs</b>		<b>178</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>4254</b>

### Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine:</b>					
Discing (2x)	1.9	33	29	27	88
Cultivating	0.9	15	13	11	39
Sub Soiling	0.7	12	12	10	34
Sow Cover Crop	0.7	12	14	24	51
<b>Total Machinery Operator</b>	<b>4.2</b>	<b>72</b>	<b>69</b>	<b>71</b>	<b>213</b>

\*Includes maintenance, fuel and repair

## Planting Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 28.0 hrs		347
Machine Operator, 19.8 hrs		341
Fertilizer Ammonium Nitrate 3 kg		2
Muriate of Potash, 17 kg		12
Insecticides		0
Fungicides		63
Grape vines, (\$2.70/vine)		3267
Custom Trellis:Materials, labour		5306
Training: Stakes, material		1162
Cover crop seed		46
Machine costs: Repairs and Maintenance		90
Fuel		156
Custom Planting		724
Irrigation		171
Consulting Fees		32
Interest on operating capital		513
Land rental		
<b>Total Variable Costs</b>		<b>12231</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		144
Interest on investment		31
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>389</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>12620</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	8.0	99			99
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>28.0</b>	<b>347</b>			<b>347</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Discing (2x)	1.9	33	28	25	86
Cultivating (2x)	1.9	33	24	14	70
Spray Pesticide (2x)	0.9	15	27	32	74
Fertilizing (2x)	0.7	12	9	8	29
Sow Cover Crop	0.7	12	14	24	50
Mowing (3x)	2.1	36	27	14	77
Hilling up	1.8	31	22	20	72
Vineyard Maintenance	3.6	62	42	18	123
Picking up vines & supplies	2.2	38	10	4	52
<b>Total Machinery Operator</b>	<b>19.8</b>	<b>341</b>	<b>246</b>	<b>175</b>	<b>761</b>

\*Includes maintenance, fuel and repair

## Second Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 22.6 hr		280
Machine Operator, 28.4 hr		488
Fertilizer: Ammonium nitrate, 3 kg		3
Muriate of Potash, 17 kg		14
Insecticides		43
Fungicides		178
Herbicides		19
Replacement vines, 2%		101
Cover crop seed		23
Machine Costs: Repairs and maintenance		113
Fuel		243
Custom Pruning - \$.25/vine		303
Custom Tying - \$.15/vine		182
Tying material		25
Irrigation		171
Consulting Fees		32
Interest on operating capital		602
Land rental		
<b>Total Variable Costs</b>		<b>2820</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		178
Interest on investment		39
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>431</b>
<b>Total Measurable "Second Year" Costs</b>		<b>3251</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	2.6	32			32
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>22.6</b>	<b>280</b>			<b>280</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Spraying (1x)	0.7	12	10	6	28
Discing (2x)	1.9	33	28	25	86
Cultivation (2x)	1.9	33	24	14	70
Spray Pesticide (7x)	3.1	53	51	41	145
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	20	122
Hilling up and removal	3.6	62	43	28	133
Vineyard Maintenance	3.6	62	40	16	119
Replacing vines	4.4	76	48	19	143
<b>Total Machinery Operator</b>	<b>28.4</b>	<b>488</b>	<b>356</b>	<b>217</b>	<b>1062</b>

\*Includes maintenance, fuel and repair

## Third Year

1.125 tonne (25% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 44.1 hrs		547
Machine Operator, 30.7 hrs		528
Fertilizer: Ammonium nitrate, 9 kg		7
Muriate of Potash, 39 kg		46
Insecticides		86
Fungicides		357
Herbicides		36
Replacement vines, 1%		50
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		262
Custom Pruning - \$.31/vine		375
Custom Tying - \$.18/vine		218
Tying material		25
Irrigation		171
Bird Control		124
Marketing Board Fees		29
Crop Insurance		156
Consulting Fees		32
Interest on operating capital		726
Land rental		
<b>Total Variable Costs</b>		<b>3925</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Third Year" Costs</b>		<b>4373</b>
<b>Contribution Margin</b>		
Gross Income (\$1676 per tonne)		1886
Total Variable Costs		3925
<b>Contribution Margin (no land costs)</b>		<b>-2040</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	6.0	74			74
Shoot Thinning	5.2	64			64
Shoot Positioning, Tucking	8.4	104			104
Leaf Removal	8.1	100			100
Bunch Thinning	7.1	88			88
Other operations	1.3	16			16
Hand Harvest	8.0	99			99
<b>Total Hand Labour</b>	<b>44.1</b>	<b>547</b>			<b>547</b>
<b>Machine</b>					
Weed Control: Spraying (2x)	1.4	24	17	9	50
Discing (2x)	1.9	33	27	25	85
Cultivation (2x)	1.9	33	23	13	69
Spray Pesticide (10x)	4.4	76	64	45	184
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	19	121
Hilling up and removal	3.6	62	43	26	131
Vineyard Maintenance	3.6	62	39	15	116
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	31	22	78
Harvest pick up and delivery	5.0	86	53	18	158
<b>Total machinery operator</b>	<b>30.7</b>	<b>528</b>	<b>389</b>	<b>234</b>	<b>1151</b>

\*Includes maintenance, fuel and repair

## Fourth Year

2.25 tonne (50% Yield)	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 44.0 hrs		546
Machine Operator, 26.5 hrs		456
Fertilizer: Ammonium nitrate, 21 kg		17
Muriate of Potash, 48 kg		56
Insecticides		130
Fungicides		541
Herbicides		45
Replacement vines, 1%		50
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		226
Custom Pruning - \$.36/vine		436
Custom Tying - \$.19/vine		230
Tying material		25
Irrigation		171
Bird Control		124
Custom harvest/delivery		182
Marketing Board Fees		59
Crop Insurance		312
Consulting Fees		32
Interest on operating capital		811
Land rental		
<b>Total Variable Costs</b>		<b>4599</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>5047</b>
<b>Contribution Margin</b>		
Gross Income (\$1676) per tonne)		3771
Total Variable Costs		4599
<b>Contribution Margin (no land costs)</b>		<b>-828</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	5.0	62			62
Shoot Thinning	6.5	81			81
Shoot Positioning, Tucking	12.3	153			153
Leaf Removal	9.9	123			123
Bunch Thinning	9.0	112			112
Other operations	1.3	16			16
<b>Total Hand Labour</b>	<b>44.0</b>	<b>546</b>			<b>546</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	26	13	77
Discing (2x)	1.9	33	28	26	87
Cultivation (2x)	1.9	33	24	14	71
Spray Pesticide (10x)	4.4	76	65	47	188
Fertilizing (2x)	1.0	17	12	10	39
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	43	21	124
Hilling up and removal	3.6	62	44	29	135
Vineyard Maintenance	3.6	62	40	17	120
Replacing vines	2.2	38	25	11	73
Canopy Management: Machine Hedging	1.5	26	31	23	80
<b>Total machinery operator</b>	<b>26.5</b>	<b>456</b>	<b>354</b>	<b>234</b>	<b>963</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant Year		4254
Planting Year		12620
Second Year		3251
Third Year		4078
Fourth Year		4797
<b>Total</b>		<b>29000</b>

Excludes Board fees, harvest costs and does not include revenues for years 3 and 4.  
Does not include land costs.

	Actual	Budget
Annual Cost to Recover Establishment Costs		<b>1404 per year</b>

(amortized over remaining 21 years of vineyard life)

## Mature Vineyard: Annual cost

	Your Farm	Cost per acre (\$)	
		Yield 3.5 Tonne	Yield 4.5 Tonne
<b>Variable Costs</b>			
Labour: Hand, 71.5 hrs		887	887
Machine Operator 31.7 hrs		545	545
Fertilizer: Ammonium Nitrate, 27 kg		22	22
Muriate of Potash, 61 kg		61	61
Insecticides		130	130
Fungicides		541	541
Herbicides		56	56
Replacement Vines 1%		50	50
Cover crop seed		23	23
Wind Machine		411	411
Machine Costs: Repairs & maintenance		174	174
Fuel		271	271
Custom pruning \$.37/vine		448	448
Custom Tying - \$.19/vine		230	230
Tying Material		25	25
Irrigation		171	171
Bird Control		124	124
Custom harvest/delivery		284	365
Marketing board fees		90	116
Crop Insurance		485	624
Consulting Fees (soil, leaf, spray)		32	32
Interest on operating capital		164	172
Land rental			
<b>Total Variable Costs</b>		<b>5223</b>	<b>5477</b>
<b>Fixed Costs</b>			
Machine Costs: Depreciation		248	248
Interest on investment		51	51
Other overhead		214	214
Land ownership			
<b>Measurable Fixed Costs</b>		<b>513</b>	<b>513</b>
<b>Total Measurable Cost</b>		<b>5736</b>	<b>5990</b>
<b>Contribution Margin</b>			
Gross Income (\$1676 per tonne)		5866	7542
Total Variable Costs		5223	5477
<b>Contribution Margin (no land costs)</b>		<b>643</b>	<b>2065</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	8.1	100			100
Shoot Thinning	9.6	119			119
Shoot Positioning, Tucking	19.3	239			239
Leaf Removal	14.6	181			181
Bunch Thinning	14.6	181			181
Other operations	1.3	16			16
Trellis Maintenance	4.0	50			50
<b>Total Hand Labour</b>	<b>71.5</b>	<b>887</b>			<b>887</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	26	11	75
Discing (2x)	1.9	33	27	24	84
Cultivation (2x)	1.9	33	23	13	69
Pesticide Spraying (10x)	4.4	76	64	44	183
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	1.0	17	17	25	59
Mowing (5x)	3.5	60	42	18	120
Hilling up and removal	3.6	62	43	26	131
Subsoiling/Aerating	1.3	22	18	11	51
Vineyard Maintenance	3.6	62	39	15	116
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	31	25	81
Canopy Management: Leaf Pulling	1.9	33	62	62	157
Brush Removal/flail	1.7	29	18	7	54
<b>Total Machine Operator</b>	<b>31.7</b>	<b>545</b>	<b>445</b>	<b>299</b>	<b>1289</b>

\*Includes maintenance, fuel and repair

# Break Even and Profitability Worksheet

## 3.5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	4075	178	4254	-4254	-4254
Planting	0%	0	12232	389	12620	-12620	-16874
2	0%	0	2820	431	3251	-3251	-20125
3	25%	1886	3925	448	4373	-2487	-22612
4	50%	3771	4599	448	5047	-1276	-23888
5	100%	5866	5938	513	6451	-585	-24473
6	100%	5866	5941	513	6453	-587	-25060
7	100%	5866	5943	513	6456	-590	-25650
8	100%	5866	5945	513	6458	-592	-26242
9	100%	5866	5948	513	6461	-595	-26836
10	100%	5866	5951	513	6463	-597	-27434
11	100%	5866	5954	513	6466	-600	-28034
12	100%	5866	5956	513	6469	-603	-28637

There is no breakeven at the 3.5 tonne/acre yield level (Does not include land costs)

## 4.5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	4075	178	4254	-4254	-4254
Planting	0%	0	12232	389	12620	-12620	-16874
2	0%	0	2820	431	3251	-3251	-20125
3	25%	1886	3925	448	4373	-2487	-22612
4	50%	3771	4599	448	5047	-1276	-23888
5	100%	7542	6192	513	6705	837	-23051
6	100%	7542	6148	513	6661	881	-22170
7	100%	7542	6103	513	6616	926	-21243
8	100%	7542	6056	513	6569	973	-20270
9	100%	7542	6008	513	6521	1021	-19249
10	100%	7542	5958	513	6471	1071	-18178
11	100%	7542	5907	513	6419	1123	-17055
12	100%	7542	5854	513	6366	1176	-15879

Breakeven in Year 23 (Does not include land costs)

## Break Even Yield to Cover Annual Variable Costs

Yield MT/ac	Revenue	Variable costs excluding harvest and operating interest costs	Harvest costs	Operate interest	Total Variable Costs	Contribution Margin
2.5	4,190	4,755	260	161	5,176	-986
2.6	4,358	4,755	270	161	5,186	-829
2.7	4,525	4,755	281	161	5,197	-672
2.8	4,693	4,755	291	162	5,208	-515
2.9	4,860	4,755	302	162	5,219	-358
3.0	5,028	4,755	312	162	5,229	-201
3.1	5,196	4,755	322	163	5,240	-45
<b>3.2</b>	<b>5,363</b>	<b>4,755</b>	<b>333</b>	<b>163</b>	<b>5,251</b>	<b>112</b>
3.3	5,531	4,755	343	163	5,262	269
3.4	5,698	4,755	354	164	5,272	426
3.5	5,866	4,755	364	164	5,283	583
3.6	6,034	4,755	374	164	5,294	740
3.7	6,201	4,755	385	165	5,305	897
3.8	6,369	4,755	395	165	5,315	1,053

Breakeven yield to cover annual variable costs is 3.2 tonnes / acre

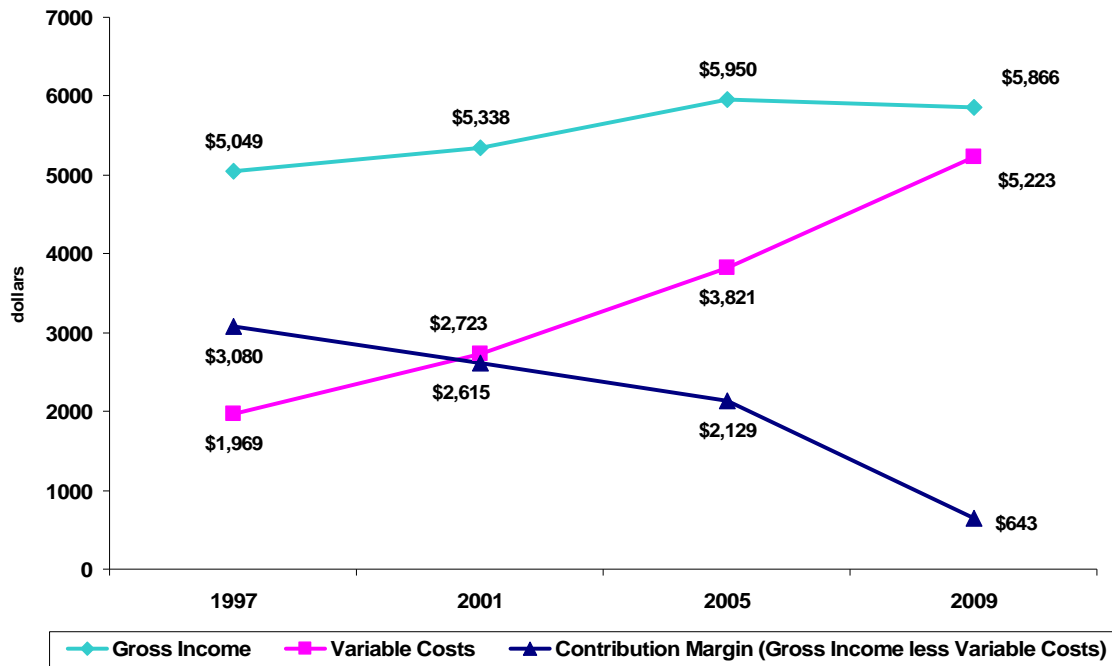
## Break Even Yield to Cover Total Annual Costs

Yield MT/ac	Revenue	Annual costs excl. harvest and operating interest costs	Harvesting costs	Operating interest	Annualized Est. Costs	Total Costs with Est. Costs	Net Cash Flow
4.0	6704	5,268	416	166	1404	7254	-550
4.1	6872	5,268	426	166	1404	7264	-393
4.2	7039	5,268	437	166	1404	7275	-236
4.3	7207	5,268	447	167	1404	7286	-79
<b>4.4</b>	<b>7374</b>	<b>5,268</b>	<b>458</b>	<b>167</b>	<b>1404</b>	<b>7297</b>	<b>78</b>
4.5	7542	5,268	468	167	1404	7307	235
4.6	7710	5,268	478	168	1404	7318	392
4.7	7877	5,268	489	168	1404	7329	548
4.8	8045	5,268	499	168	1404	7340	705
4.9	8212	5,268	510	169	1404	7350	862
5.0	8380	5,268	520	169	1404	7361	1019
5.1	8548	5,268	530	170	1404	7372	1176

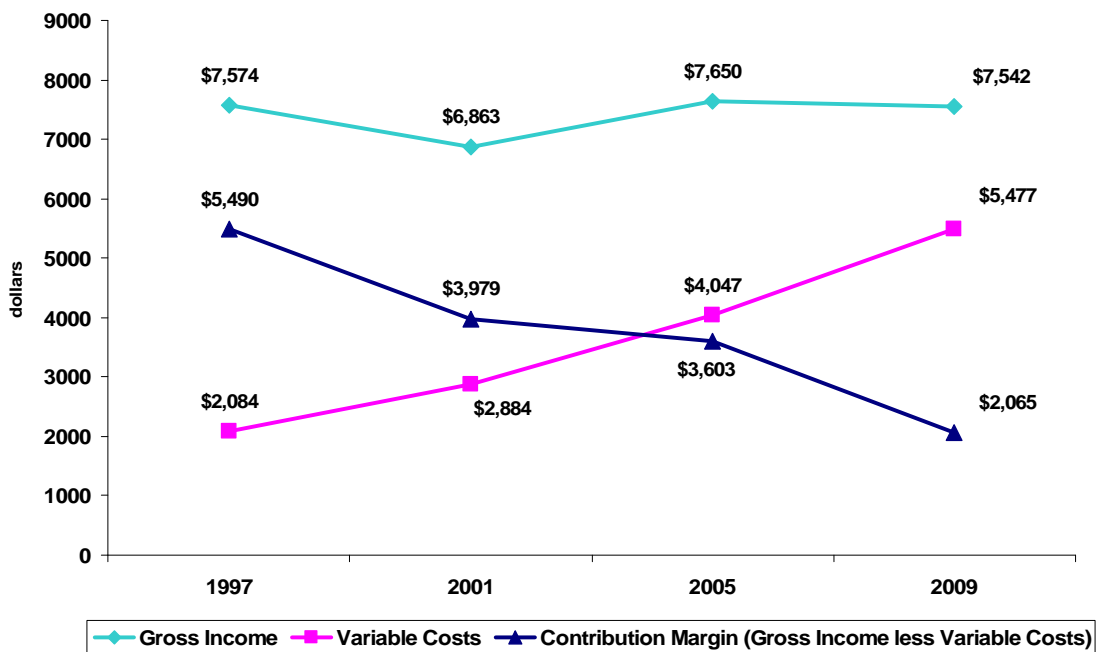
Breakeven yield to cover total annual costs is 4.4 tonnes / acre

(Includes annualized establishment costs, does not include land costs)

**OMAFRA Cabernet Franc Cost of Production 1997 - 2009  
at 3.5 tonne per acre (3.0 t/acre in 1997)**



**Cabernet Franc Cost of Production 1997- 2009  
at 4.5 tonnes per acre**



# 3. Chardonnay

## Preplant Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Machinery operator, 4.2 hrs		72
Custom Plowing		23
Cover Crop		46
Machine Costs: Repairs and maintenance		33
Fuel		36
Consulting Fees		32
Interest on operating capital		65
Land rental		
Land Preparation (levelling etc.)		850
Tile Drainage		2918
<b>Total Variable Costs</b>		<b>4075</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		59
Interest on investment		13
Other overhead		107
Land ownership		
<b>Measurable Fixed Costs</b>		<b>178</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>4254</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine</b>					
Discing (2x)	1.9	33	29	27	88
Cultivating	0.9	15	13	11	39
Sub Soiling	0.7	12	12	10	34
Sow Cover Crop	0.7	12	14	24	51
<b>Total Machinery Operator</b>	<b>4.2</b>	<b>72</b>	<b>69</b>	<b>71</b>	<b>213</b>

\*Includes maintenance, fuel and repair

## Planting Year

<b>Variable Costs</b>	<b>Cost per acre (\$)</b>	
	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 28.0 hrs		347
Machine Operator, 19.8 hrs		341
Fertilizer Ammonium Nitrate 3 kg		2
Muriate of Potash, 17 kg		12
Insecticides		0
Fungicides		63
Grape vines, (\$2.70/vine)		3267
Custom Trellis: Materials, labour		5306
Training: Stakes, material		1162
Cover crop seed		46
Machine costs: Repairs and Maintenance		90
Fuel		156
Custom Planting		724
Irrigation		171
Consulting Fees		32
Interest on operating capital		513
Land rental		
<b>Total Variable Costs</b>		<b>12231</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		144
Interest on investment		31
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>389</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>12620</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	8.0	99			99
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>28.0</b>	<b>347</b>			<b>347</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Discing (2x)	1.9	33	28	25	86
Cultivating (2x)	1.9	33	24	14	70
Spray Pesticide (2x)	0.9	15	27	32	74
Fertilizing (2x)	0.7	12	9	8	29
Sow cover crop	0.7	12	14	24	50
Mowing (3x)	2.1	36	27	14	77
Hilling up	1.8	31	24	20	75
Vineyard Maintenance	3.6	62	40	18	120
Picking up vines & supplies	2.2	38	10	4	52
<b>Total Machinery Operator</b>	<b>19.8</b>	<b>341</b>	<b>246</b>	<b>175</b>	<b>761</b>

\*Includes maintenance, fuel and repair

## Second Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 22.6 hr		280
Machine Operator, 28.4 hr		488
Fertilizer: Ammonium nitrate, 3 kg		3
Muriate of Potash, 17 kg		14
Insecticides		43
Fungicides		178
Herbicides		19
Replacement vines, 2%		101
Cover crop seed		23
Machine Costs: Repairs and maintenance		113
Fuel		243
Custom Pruning - \$.25/vine		303
Custom Tying - \$.15/vine		182
Tying material		25
Irrigation		171
Consulting Fees		32
Interest on operating capital		602
Land rental		
<b>Total Variable Costs</b>		<b>2820</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		178
Interest on investment		39
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>431</b>
<b>Total Measurable "Second Year" Costs</b>		<b>3251</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	2.6	32			32
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>22.6</b>	<b>280</b>			<b>280</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Spraying (1x)	0.7	12	10	6	28
Discing (2x)	1.9	33	28	25	86
Cultivation (2x)	1.9	33	24	14	70
Spray Pesticide (7x)	3.1	53	51	41	145
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	20	122
Hilling up and removal	3.6	62	43	28	133
Vineyard Maintenance	3.6	62	40	16	119
Replacing vines	4.4	76	48	19	143
<b>Total Machinery Operator</b>	<b>28.4</b>	<b>488</b>	<b>356</b>	<b>217</b>	<b>1062</b>

\*Includes maintenance, fuel and repair

## Third Year

1.25 tonne (25% Yield)	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 44.1 hrs		547
Machine Operator, 30.7 hrs		528
Fertilizer: Ammonium nitrate, 9 kg		7
Muriate of Potash, 39 kg		46
Insecticides		86
Fungicides		357
Herbicides		36
Replacement vines, 1%		50
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		262
Custom Pruning - \$.31/vine		375
Custom Tying - \$.18/vine		218
Tying material		25
Irrigation		171
Bird Control		124
Marketing Board Fees		28
Crop Insurance		142
Consulting Fees		32
Interest on operating capital		725
Land rental		
<b>Total Variable Costs</b>		<b>3909</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Third Year" Costs</b>		<b>4357</b>
<b>Contribution Margin</b>		
Gross Income (\$1396 per tonne)		1745
Total Variable Costs		3909
<b>Contribution Margin (no land costs)</b>		<b>-2164</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	6.0	74			74
Shoot Thinning	5.2	64			64
Shoot Positioning, Tucking	8.4	104			104
Leaf Removal	8.1	100			100
Bunch Thinning	7.1	88			88
Other operations	1.3	16			16
Hand Harvest	8.0	99			99
<b>Total Hand Labour</b>	<b>44.1</b>	<b>547</b>			<b>547</b>
<b>Machine</b>					
Weed Control: Spraying (2x)	1.4	24	17	9	50
Discing (2x)	1.9	33	27	25	85
Cultivation (2x)	1.9	33	23	13	69
Spray Pesticide (10x)	4.4	76	64	45	184
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	19	121
Hilling up and removal	3.6	62	43	26	131
Vineyard Maintenance	3.6	62	39	15	116
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	31	22	78
Harvest pick up and delivery	5.0	86	53	18	158
<b>Total machinery operator</b>	<b>30.7</b>	<b>528</b>	<b>389</b>	<b>234</b>	<b>1151</b>

\*Includes maintenance, fuel and repair

## Fourth Year

2.5 tonne (50% Yield)	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 44.0 hrs		546
Machine Operator, 26.5 hrs		456
Fertilizer: Ammonium nitrate, 21 kg		17
Muriate of Potash, 48 kg		56
Insecticides		130
Fungicides		541
Herbicides		45
Replacement vines, 1%		50
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		226
Custom Pruning - \$.36/vine		436
Custom Tying - \$.19/vine		230
Tying material		25
Irrigation		171
Bird Control		124
Custom harvest/delivery		203
Marketing Board Fees		58
Crop Insurance		284
Consulting Fees		32
Interest on operating capital		815
Land rental		
<b>Total Variable Costs</b>		<b>4595</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>5042</b>
<b>Contribution Margin</b>		
Gross Income (\$1396) per tonne)		3490
Total Variable Costs		4595
<b>Contribution Margin (no land costs)</b>		<b>-1105</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	5.0	62			62
Shoot Thinning	6.5	81			81
Shoot Positioning, Tucking	12.3	153			153
Leaf Removal	9.9	123			123
Bunch Thinning	9.0	112			112
Other operations	1.3	16			16
<b>Total Hand Labour</b>	<b>44.0</b>	<b>546</b>			<b>546</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	26	13	77
Discing (2x)	1.9	33	28	26	87
Cultivation (2)	1.9	33	24	14	71
Spray Pesticide (10x)	4.4	76	65	47	188
Fertilizing (2x)	1.0	17	12	10	39
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	43	21	124
Hilling up and removal	3.6	62	44	29	135
Vineyard Maintenance	3.6	62	40	17	120
Replacing vines	2.2	38	25	11	73
Canopy Management: Machine Hedging	1.5	26	31	23	80
<b>Total machinery operator</b>	<b>26.5</b>	<b>456</b>	<b>354</b>	<b>234</b>	<b>1043</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant Year		4254
Planting Year		12620
Second Year		3251
Third Year		4063
Fourth Year		4773
<b>Total</b>		<b>28961</b>

Excludes Board fees, harvest costs and does not include revenues for years 3 and 4. Does not include land costs.

	Actual	Budget
Annual Cost to Recover Establishment Costs (amortized over remaining 21 years of vineyard life)		1428 per year

## Mature Vineyard: Annual Costs

	Your Farm	Cost per acre (\$)	
		Yield	Yield
		4 Tonne	5 Tonne
<b>Variable Costs</b>			
Labour: Hand, 71.5 hrs		887	887
Machine Operator 31.7 hrs		545	545
Fertilizer: Ammonium Nitrate, 27 kg		22	22
Muriate of Potash, 61 kg		61	61
Insecticides		130	125
Fungicides		541	541
Herbicides		56	56
Replacement Vines 1%		50	50
Cover crop seed		23	23
Wind Machine		411	411
Machine Costs: Repairs & maintenance		174	174
Fuel		271	271
Custom pruning \$.37/vine		448	448
Custom Tying - \$.19/vine		230	230
Tying Material		25	25
Irrigation		171	171
Bird Control		124	124
Custom harvest/delivery		324	405
Marketing board fees		92	115
Crop Insurance		454	568
Consulting Fees (soil, leaf, spray)		32	32
Interest on operating capital		165	172
Land rental			
<b>Total Variable Costs</b>		<b>5235</b>	<b>5455</b>
<b>Fixed Costs</b>			
Machine Costs: Depreciation		248	248
Interest on investment		51	51
Other overhead		214	214
Land ownership			
<b>Measurable Fixed Costs</b>		<b>513</b>	<b>513</b>
<b>Total Measurable Cost</b>		<b>5748</b>	<b>5967</b>
<b>Contribution Margin</b>			
Gross Income (\$1396 per tonne)		5584	6980
Total Variable Costs		5235	5455
<b>Contribution Margin (no land costs)</b>		<b>349</b>	<b>1525</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	8.1	100			100
Shoot Thinning	9.6	119			119
Shoot Positioning, Tucking	19.3	239			239
Leaf Removal	14.6	181			181
Bunch Thinning	14.6	181			181
Other operations	1.3	16			16
Trellis Maintenance	4.0	50			50
<b>Total Hand Labour</b>	<b>71.5</b>	<b>887</b>			<b>887</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	26	11	75
Discing (2x)	1.9	33	27	24	84
Cultivation (2x)	1.9	33	23	13	69
Pesticide Spraying (10x)	4.4	76	64	44	183
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	1.0	17	17	25	59
Mowing (5x)	3.5	60	42	18	120
Hilling up and removal	3.6	62	43	26	131
Subsoiling/Aerating	1.3	22	18	11	51
Vineyard Maintenance	3.6	62	39	15	116
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	31	25	81
Canopy Management: Leaf Pulling	1.9	33	62	62	157
Brush Removal/flail	1.7	29	18	7	54
<b>Total Machine Operator</b>	<b>31.7</b>	<b>545</b>	<b>445</b>	<b>299</b>	<b>1289</b>

\*Includes maintenance, fuel and repair

## Break Even and Profitability Worksheet

### 4 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	4075	178	4254	-4254	-4254
Planting	0%	0	12232	389	12620	-12620	-16874
2	0%	0	2820	431	3251	-3251	-20125
3	25%	1745	3909	448	4357	-2612	-22737
4	50%	3490	4594	448	5042	-1552	-24290
5	100%	5584	5963	513	6476	-892	-25181
6	100%	5584	5975	513	6488	-904	-26085
7	100%	5584	5988	513	6501	-917	-27001
8	100%	5584	6001	513	6514	-930	-27931
9	100%	5584	6015	513	6527	-943	-28874
10	100%	5584	6029	513	6541	-957	-29831
11	100%	5584	6043	513	6556	-972	-30803
12	100%	5584	6058	513	6571	-987	-31790

There is no breakeven at the 4 tonne/acre yield level (Does not include land costs)

### 5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	4075	178	4254	-4254	-4254
Planting	0%	0	12232	389	12620	-12620	-16874
2	0%	0	2820	431	3251	-3251	-20125
3	25%	1745	3909	448	4357	-2612	-22737
4	50%	3490	4594	448	5042	-1552	-24290
5	100%	6980	6182	513	6695	285	-24005
6	100%	6980	6156	513	6669	311	-23694
7	100%	6980	6130	513	6642	338	-23356
8	100%	6980	6102	513	6615	365	-22990
9	100%	6980	6073	513	6586	394	-22597
10	100%	6980	6044	513	6557	423	-22173
11	100%	6980	6014	513	6526	454	-21719
12	100%	6980	5982	513	6495	485	-21234

Breakeven in Year 35 (Does not include land costs)

## Break Even Yield to Cover Annual Variable Costs

Yield MT/ac	Revenue	Variable costs excluding harvest and operating interest costs	Harvesting costs	Operating interest	Total Variable Costs	Contribution Margin
3.2	4,467	4,711	333	162	5,206	-739
3.3	4,607	4,711	343	162	5,217	-610
3.4	4,746	4,711	354	163	5,228	-481
3.5	4,886	4,711	364	163	5,238	-352
3.6	5,026	4,711	374	163	5,249	-223
3.7	5,165	4,711	385	164	5,260	-95
<b>3.8</b>	<b>5,305</b>	<b>4,711</b>	<b>395</b>	<b>164</b>	<b>5,271</b>	<b>34</b>
3.9	5,444	4,711	406	164	5,281	163
4.0	5,584	4,711	416	165	5,292	292
4.1	5,724	4,711	426	165	5,303	421
4.2	5,863	4,711	437	165	5,314	550
4.3	6,003	4,711	447	166	5,324	679
4.4	6,142	4,711	458	166	5,335	807
4.5	6,282	4,711	468	166	5,346	936

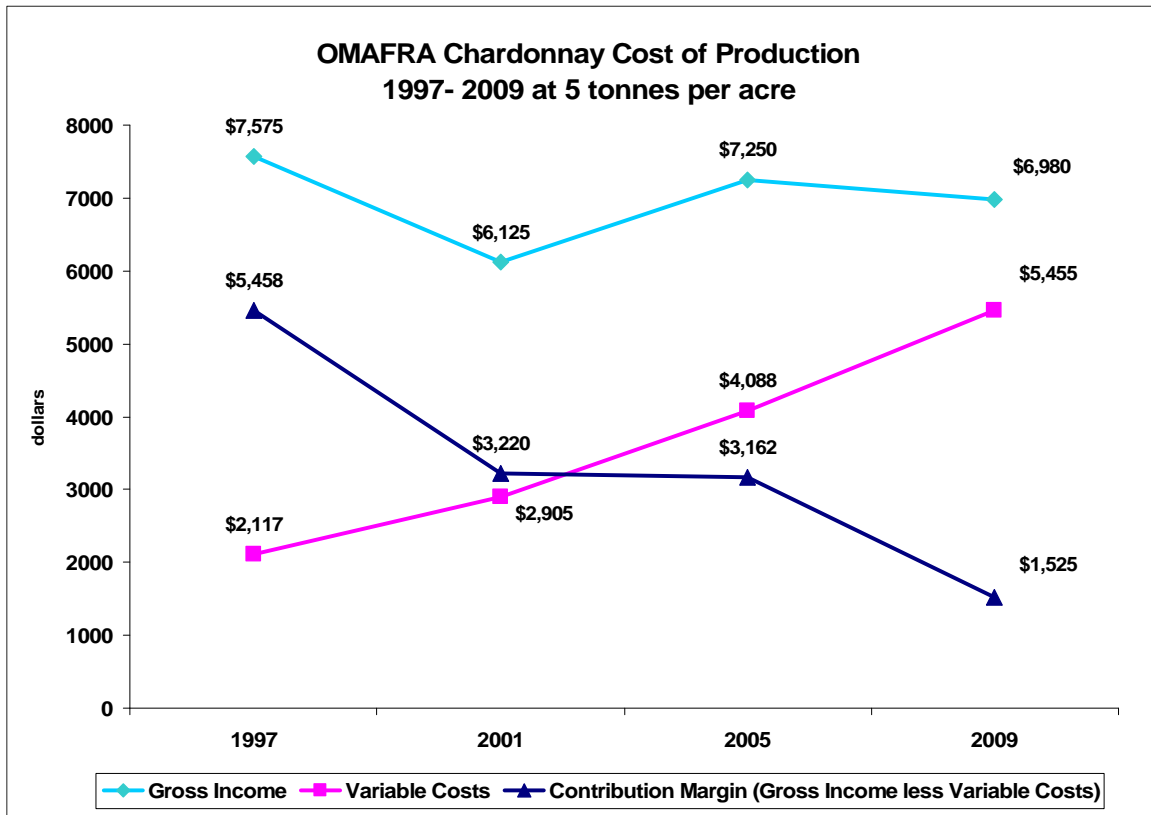
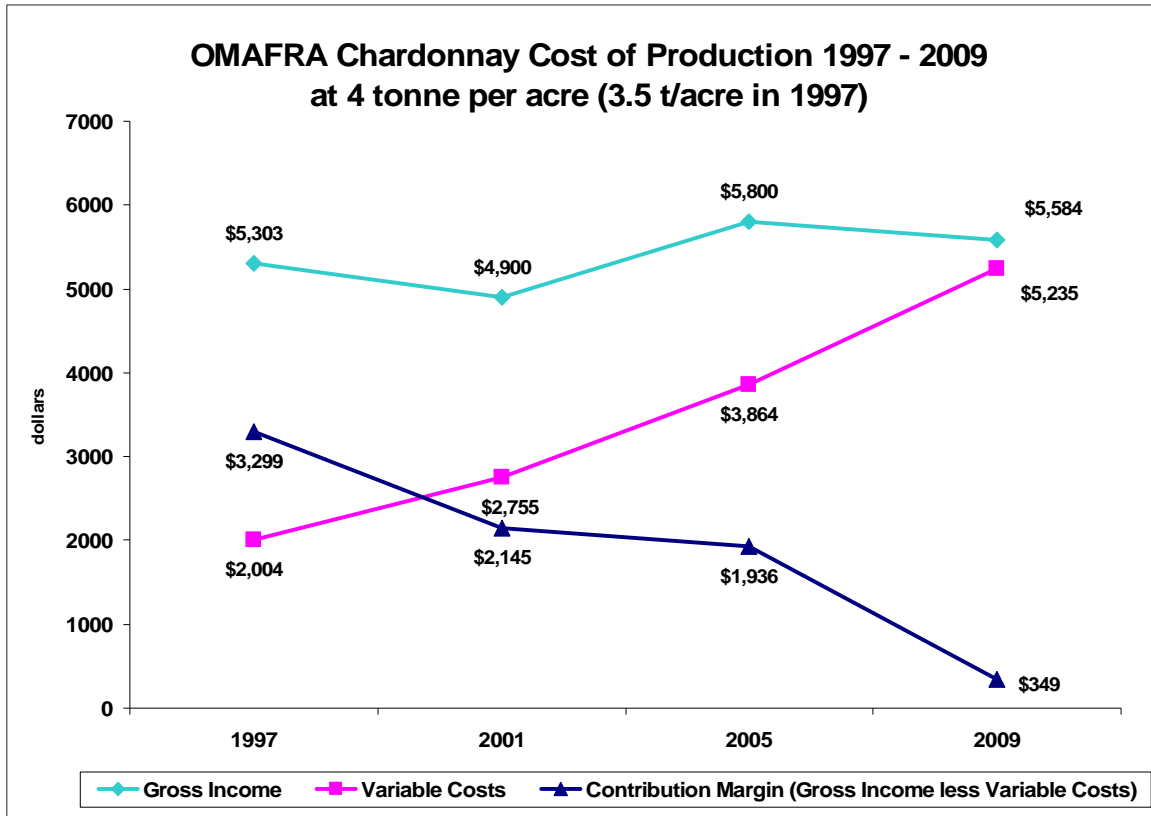
Breakeven yield to cover annual variable costs is 3.8 tonnes / acre

## Break Even Yield to Cover Total Annual Costs

Yield MT/ac	Revenue	Annual costs excluding harvest and operating interest costs	Harvesting costs	Operating interest	Annualized Est. Costs	Total Costs with Est. Costs	Net Cash Flow
4.2	5863	5,224	437	165	1428	7254	-1391
4.3	6003	5,224	447	166	1428	7265	-1262
4.4	6142	5,224	458	166	1428	7275	-1133
4.5	6282	5,224	468	166	1428	7286	-1004
4.6	6422	5,224	478	167	1428	7297	-875
4.7	6561	5,224	489	167	1428	7308	-746
4.8	6701	5,224	499	167	1428	7318	-618
4.9	6840	5,224	510	168	1428	7329	-489
5.0	6980	5,224	520	168	1428	7340	-360
5.1	7120	5,224	530	169	1428	7351	-231
5.2	7259	5,224	541	169	1428	7361	-102
<b>5.3</b>	<b>7399</b>	<b>5,224</b>	<b>551</b>	<b>169</b>	<b>1428</b>	<b>7372</b>	<b>27</b>
5.4	7538	5,224	562	170	1428	7383	156
5.5	7678	5,224	572	170	1428	7394	284

Breakeven yield to cover total annual costs is 5.3 tonnes / acre

(Includes annualized establishment costs, does not include land costs)



## 4. Vidal

	Cost per acre (\$)	
	Actual	Budget
<b>Variable Costs</b>		
Labour: Machinery operator, 4.2 hrs		72
Custom Plowing		23
Cover Crop		46
Machine Costs: Repairs and maintenance		33
Fuel		36
Consulting Fees		32
Interest on operating capital		61
Land rental		
Land Preparation (levelling etc.)		600
Tile Drainage		2918
<b>Total Variable Costs</b>		<b>3821</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		59
Interest on investment		13
Other overhead		107
Land ownership		
<b>Measurable Fixed Costs</b>		<b>178</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>4000</b>

### Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine</b>					
Discing (2x)	1.9	33	29	27	88
Cultivating	0.9	15	13	11	39
Sub Soiling	0.7	12	12	10	34
Sow Cover Crop	0.7	12	14	24	51
<b>Total Machinery Operator</b>	<b>4.2</b>	<b>72</b>	<b>69</b>	<b>71</b>	<b>213</b>

\*Includes maintenance, fuel and repair

## Planting Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 28.0 hrs		347
Machine Operator, 19.8 hrs		341
Fertilizer Ammonium Nitrate 3 kg		2
Muriate of Potash, 17 kg		20
Insecticides		0
Fungicides		63
Grape vines, (\$2.70/vine)		2614
Custom Trellis:Materials, labour		4946
Training: Stakes, material		929
Cover crop seed		46
Machine costs: Repairs and Maintenance		90
Fuel		156
Custom Planting		590
Irrigation		171
Consulting Fees		32
Interest on operating capital		460
Land rental		
<b>Total Variable Costs</b>		<b>10806</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		144
Interest on investment		31
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>389</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>11195</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	8.0	99			99
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>28.0</b>	<b>347</b>			<b>347</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Discing (2x)	1.9	33	28	25	86
Cultivating (2x)	1.9	33	24	14	70
Spray Pesticide (2x)	0.9	15	27	32	74
Fertilizing (2x)	0.7	12	9	8	29
Sow Cover Crop	0.7	12	14	24	50
Mowing (3x)	2.1	36	27	14	77
Hilling up	1.8	31	22	20	72
Vineyard Maintenance	3.6	62	42	18	123
Picking up vines & supplies	2.2	38	10	4	52
<b>Total Machinery Operator</b>	<b>19.8</b>	<b>341</b>	<b>246</b>	<b>175</b>	<b>761</b>

\*Includes maintenance, fuel and repair

## Second Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 22.6 hr		280
Machine Operator, 28.4 hr		488
Fertilizer: Ammonium nitrate, 20 kg		16
Muriate of Potash, 41 kg		48
Insecticides		43
Fungicides		178
Herbicides		19
Replacement vines, 2%		79
Cover crop seed		23
Machine Costs: Repairs and maintenance		113
Fuel		243
Custom Pruning - \$.25/vine		242
Custom Tying - \$.21/vine		203
Tying material		25
Irrigation		171
Consulting Fees		32
Interest on operating capital		547
Land rental		
<b>Total Variable Costs</b>		<b>2750</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		178
Interest on investment		39
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>431</b>
<b>Total Measurable "Second Year" Costs</b>		<b>3182</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand Hoeing	2.6	32			32
Summer training, tying, trunk est	20.0	248			248
<b>Total Hand Labour</b>	<b>22.6</b>	<b>280</b>			<b>280</b>
<b>Machine</b>					
Weed Control: Grape Hoeing	4.0	69	43	16	128
Spraying (1x)	0.7	12	10	6	28
Discing (2x)	1.9	33	28	25	86
Cultivation (2x)	1.9	33	24	14	70
Spray Pesticide (7x)	3.1	53	51	41	145
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	20	122
Hilling up and removal	3.6	62	43	28	133
Vineyard Maintenance	3.6	62	40	16	119
Replacing vines	4.4	76	48	19	143
<b>Total Machinery Operator</b>	<b>28.4</b>	<b>488</b>	<b>356</b>	<b>217</b>	<b>1062</b>

\*Includes maintenance, fuel and repair

## Third Year

1.75 tonne (25% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 14.0 hrs		174
Machine Operator, 30.7 hrs		528
Fertilizer: Ammonium nitrate, 41 kg		33
Muriate of Potash, 61 kg		71
Insecticides		86
Fungicides		357
Herbicides		36
Replacement vines, 1%		40
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		262
Custom Pruning - \$.31/vine		300
Custom Tying - \$.22/vine		213
Tying material		25
Irrigation		171
Bird Control		124
Marketing Board Fees		26
Crop Insurance		72
Consulting Fees		32
Interest on operating capital		653
Land rental		
<b>Total Variable Costs</b>		<b>3353</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Third Year" Costs</b>		<b>3801</b>
<b>Contribution Margin</b>		
Gross Income (\$588 per tonne)		1029
Total Variable Costs		3353
<b>Contribution Margin (no land costs)</b>		<b>-2324</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	6.0	74			74
Shoot Thinning	0.0	0			0
Shoot Positioning, Tucking	0.0	0			0
Leaf Removal	0.0	0			0
Bunch Thinning	0.0	0			0
Other operations	0.0	0			0
Hand Harvest	8.0	99			99
<b>Total Hand Labour</b>	<b>14.0</b>	<b>174</b>			<b>174</b>
<b>Machine</b>					
Weed Control: Spraying (2x)	1.4	24	17	9	50
Discing (2x)	1.9	33	27	25	85
Cultivation (2x)	1.9	33	23	13	69
Spray Pesticide (10x)	4.4	76	64	45	184
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	42	19	121
Hilling up and removal	3.6	62	43	26	131
Vineyard Maintenance	3.6	62	39	15	116
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	31	22	78
Harvest pick up and delivery	5.0	86	53	18	158
<b>Total machinery operator</b>	<b>30.7</b>	<b>528</b>	<b>389</b>	<b>234</b>	<b>1151</b>

\*Includes maintenance, fuel and repair

## Fourth Year

3.5 tonne (50% Yield)	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 5.0 hrs		62
Machine Operator, 26.5 hrs		456
Fertilizer: Ammonium nitrate, 61 kg		49
Muriate of Potash, 71 kg		83
Insecticides		130
Fungicides		541
Herbicides		45
Replacement vines, 1%		40
Cover crop seed		23
Machine Costs: Repairs and maintenance		127
Fuel		226
Custom Pruning - \$.39/vine		378
Custom Tying - \$.23/vine		223
Tying material		25
Irrigation		171
Bird Control		124
Custom harvest/delivery		284
Marketing Board Fees		52
Crop Insurance		144
Consulting Fees		32
Interest on operating capital		745
Land rental		
<b>Total Variable Costs</b>		<b>3959</b>
<b>Fixed Costs</b>		
Machine Costs: Depreciation		192
Interest on investment		42
Other overhead		214
Land ownership		
<b>Measurable Fixed Costs</b>		<b>448</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>4407</b>
<b>Contribution Margin</b>		
Gross Income (\$588) per tonne)		2058
Total Variable Costs		3959
<b>Contribution Margin (no land costs)</b>		<b>-1901</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	5.0	62			62
Shoot Thinning	0.0	0			0
Shoot Positioning, Tucking	0.0	0			0
Leaf Removal	0.0	0			0
Bunch Thinning	0.0	0			0
Other operations	0.0	0			0
<b>Total Hand Labour</b>	<b>5.0</b>	<b>62</b>			<b>62</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	26	13	77
Discing (2x)	1.9	33	28	26	87
Cultivation (2x)	1.9	33	24	14	71
Spray Pesticide (10x)	4.4	76	65	47	188
Fertilizing (2x)	1.0	17	12	10	39
Sow cover crop	0.7	12	14	24	50
Mowing (5x)	3.5	60	43	21	124
Hilling up and removal	3.6	62	44	29	135
Vineyard Maintenance	3.6	62	40	17	120
Replacing vines	2.2	38	25	11	73
Canopy Management: Machine Hedging	1.5	26	31	23	80
<b>Total machinery operator</b>	<b>26.5</b>	<b>456</b>	<b>354</b>	<b>234</b>	<b>963</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant Year		4000
Planting Year		11195
Second Year		3182
Third Year		3509
Fourth Year		4061
<b>Total</b>		<b>25946</b>

Excludes Board fees, harvest costs and does not include revenues for years 3 and 4. Does not include land costs.

	Actual	Budget
Annual Cost to Recover Establishment Costs		1381 per year
(amortized over remaining 21 years of vineyard life)		

## Mature Vineyard: Annual Costs

	Your Farm	Cost per acre (\$)	
		Yield 5 Tonne	Yield 7 Tonne
<b>Variable Costs</b>			
Labour: Hand, 25.1 hrs		311	311
Machine Operator 32.3 hrs		556	556
Fertilizer: Ammonium Nitrate, 81 kg		66	66
Muriate of Potash, 94 kg		110	110
Insecticides		130	130
Fungicides		541	541
Herbicides		56	56
Replacement Vines 1%		40	40
Cover crop seed		23	23
Wind Machine		411	411
Machine Costs: Repairs & maintenance		174	174
Fuel		276	276
Custom pruning \$.39/vine		378	378
Custom Tying - \$.23/vine		223	223
Tying Material		25	25
Irrigation		171	171
Bird Control		124	124
Custom harvest/delivery		405	567
Marketing board fees		75	105
Crop Insurance		205	287
Consulting Fees (soil, leaf, spray)		32	32
Interest on operating capital		141	150
Land rental			
<b>Total Variable Costs</b>		<b>4473</b>	<b>4756</b>
<b>Fixed Costs</b>			
Machine Costs: Depreciation		248	248
Interest on investment		51	51
Other overhead		214	214
Land ownership			
<b>Measurable Fixed Costs</b>		<b>513</b>	<b>513</b>
<b>Total Measurable Cost</b>		<b>4986</b>	<b>5269</b>
<b>Contribution Margin</b>			
Gross Income (\$588 per tonne)		2940	4116
Total Variable Costs		4473	4756
<b>Contribution Margin (no land costs)</b>		<b>-1533</b>	<b>-640</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	8.1	100			100
Shoot Thinning	2.0	25			25
Shoot Positioning, Tucking	5.0	62			62
Leaf Removal	1.0	12			12
Bunch Thinning	5.0	62			62
Other operations	0.0	0			0
Trellis Maintenance	4.0	50			50
<b>Total Hand Labour</b>	<b>25.1</b>	<b>311</b>			<b>311</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	25	11	75
Discing (2x)	1.9	33	27	24	84
Cultivation (2x)	1.9	33	23	13	69
Pesticide Spraying (10x)	4.4	76	64	44	183
Fertilizing (2x)	1.0	17	12	9	38
Sow cover crop	1.0	17	17	24	59
Mowing (5x)	3.5	60	41	18	120
Hilling up and removal	3.6	62	42	26	130
Subsoiling/Aerating	1.3	22	18	11	51
Vineyard Maintenance	3.6	62	39	15	115
Replacing vines	2.2	38	24	9	71
Canopy Management: Machine Hedging	1.5	26	30	24	81
Canopy Management: Leaf Pulling	1.9	33	62	62	156
Brush Removal/flail	2.3	40	25	9	73
<b>Total Machine Operator</b>	<b>32.3</b>	<b>556</b>	<b>450</b>	<b>299</b>	<b>1304</b>

\*Includes maintenance, fuel and repair

# Break Even and Profitability Worksheet

## 5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	3821	178	4000	-4000	-4000
Planting	0%	0	10806	389	11195	-11195	-15195
2	0%	0	2750	431	3182	-3182	-18377
3	25%	1029	3353	448	3800	-2771	-21148
4	50%	2058	3959	448	4407	-2349	-23497
5	100%	2940	5175	513	5687	-2747	-26244
6	100%	2940	5248	513	5760	-2820	-29065
7	100%	2940	5323	513	5835	-2895	-31960
8	100%	2940	5400	513	5913	-2973	-34932
9	100%	2940	5480	513	5993	-3053	-37985
10	100%	2940	5562	513	6075	-3135	-41120
11	100%	2940	5648	513	6160	-3220	-44340
12	100%	2940	5736	513	6248	-3308	-47648

There is no breakeven at the 5.0 tonne/acre yield level (Does not include land costs)

## 7 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	3821	178	4000	-4000	-4000
Planting	0%	0	10806	389	11195	-11195	-15195
2	0%	0	2750	431	3182	-3182	-18377
3	25%	1029	3353	448	3800	-2771	-21148
4	50%	2058	3959	448	4407	-2349	-23497
5	100%	4116	5458	513	5970	-1854	-25351
6	100%	4116	5501	513	6014	-1898	-27249
7	100%	4116	5546	513	6059	-1943	-29192
8	100%	4116	5593	513	6106	-1990	-31182
9	100%	4116	5641	513	6154	-2038	-33219
10	100%	4116	5690	513	6203	-2087	-35307
11	100%	4116	5742	513	6254	-2138	-37445
12	100%	4116	5794	513	6307	-2191	-39636

There is no breakeven at the 7.0 tonne/acre yield level (Does not include land costs)

## Break Even Yield to Cover Annual Variable Costs

Yield MT/ac	Revenue	Variable costs excluding harvest and operating interest costs	Harvesting costs	Operating interest	Total Variable Costs	Contribution Margin
7.3	4,292	3,893	759	150	4,802	-510
7.4	4,351	3,893	770	150	4,813	-462
7.5	4,410	3,893	780	151	4,824	-414
7.6	4,469	3,893	790	151	4,834	-365
7.7	4,528	3,893	801	151	4,845	-317
7.8	4,586	3,893	811	152	4,856	-269
7.9	4,645	3,893	822	152	4,866	-221
8.0	4,704	3,893	832	152	4,877	-173
8.1	4,763	3,893	842	153	4,888	-125
8.2	4,822	3,893	853	153	4,899	-77
8.3	4,880	3,893	863	153	4,909	-29
<b>8.4</b>	<b>4,939</b>	<b>3,893</b>	<b>874</b>	<b>154</b>	<b>4,920</b>	<b>19</b>
8.5	4,998	3,893	884	154	4,931	67
8.6	5,057	3,893	894	154	4,942	115

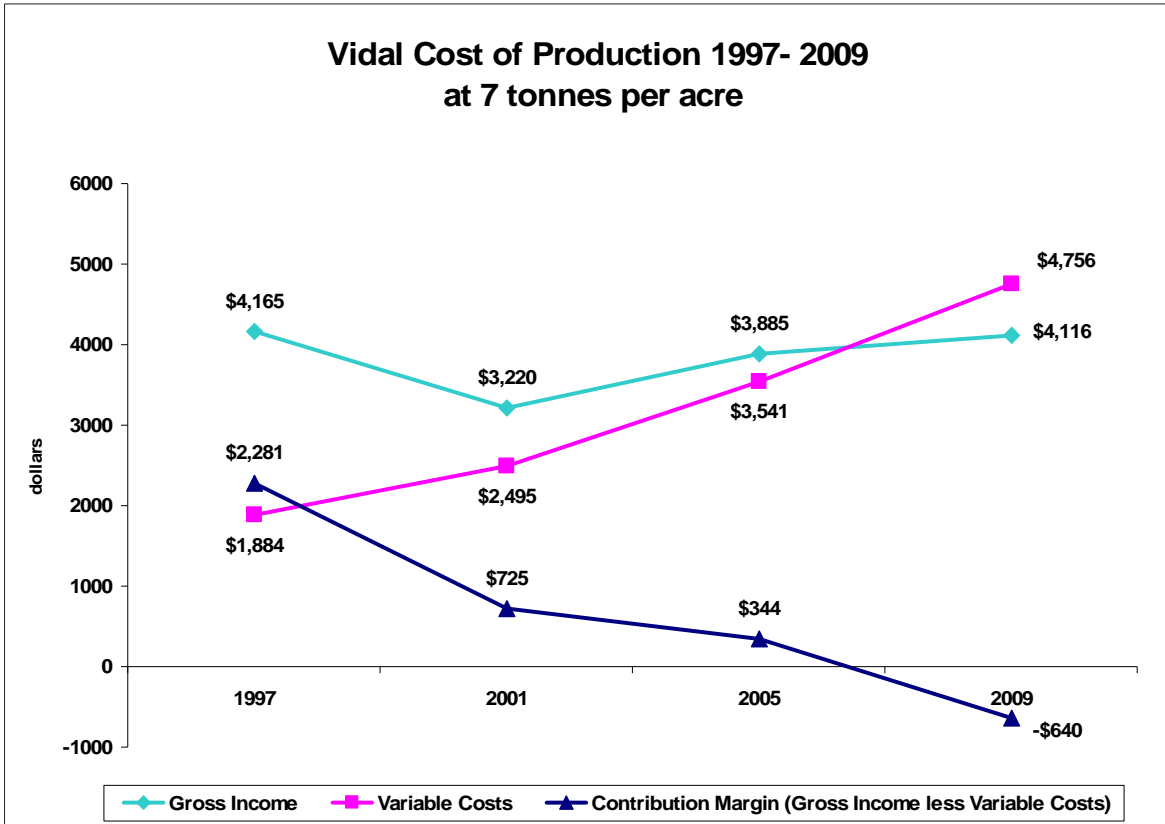
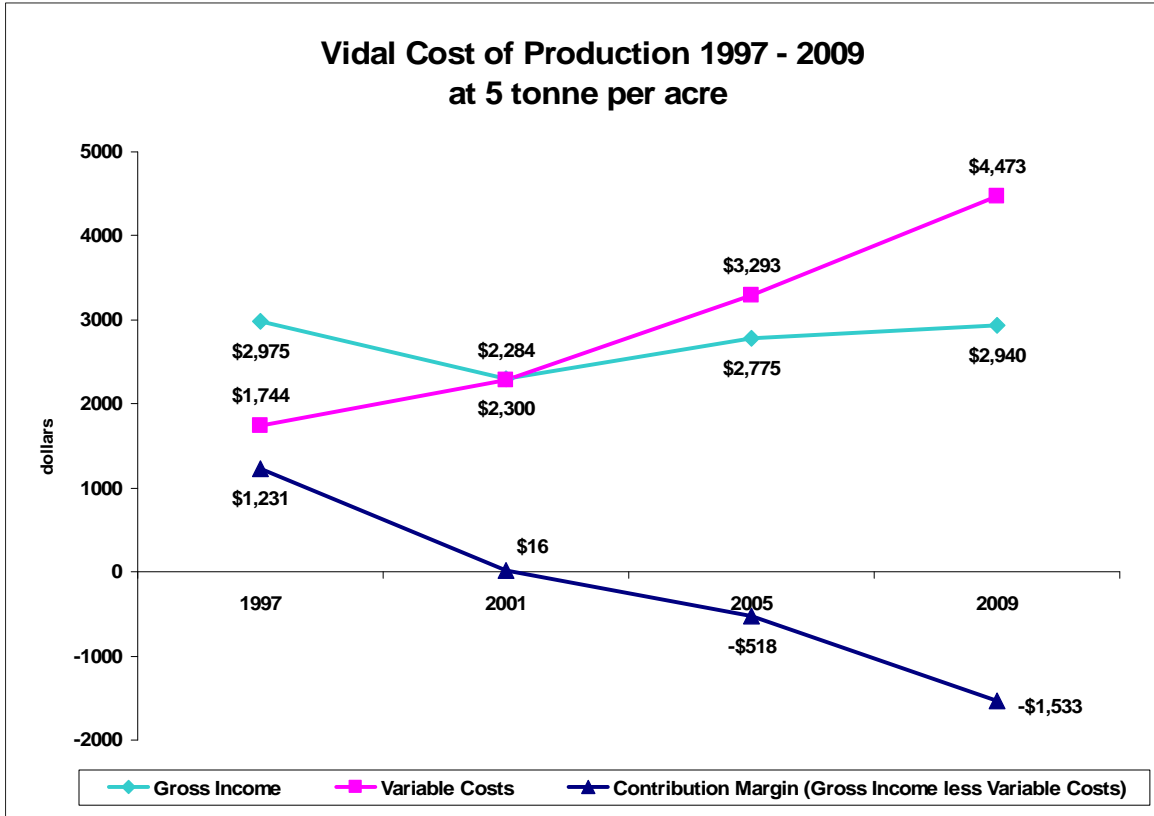
Breakeven yield to cover annual variable costs is 8.4 tonnes / acre

## Break Even Yield to Cover Total Annual Costs

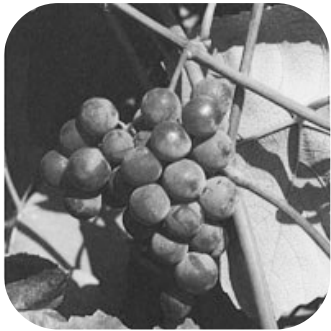
Yield MT/ac	Revenue	Annual costs excluding harvest and operating interest costs	Harvesting costs	Operating interest	Annualized Est. Costs	Total Costs with Est. Costs	Net Cash Flow
11.7	6880	4,406	1,217	165	1381	7168	-289
11.8	6938	4,406	1,227	165	1381	7179	-241
11.9	6997	4,406	1,238	165	1381	7190	-193
12.0	7056	4,406	1,248	166	1381	7201	-145
12.1	7115	4,406	1,258	166	1381	7211	-97
12.2	7174	4,406	1,269	166	1381	7222	-49
<b>12.3</b>	<b>7232</b>	<b>4,406</b>	<b>1,279</b>	<b>167</b>	<b>1381</b>	<b>7233</b>	<b>0</b>
12.4	7291	4,406	1,290	167	1381	7244	48
12.5	7350	4,406	1,300	167	1381	7254	96
12.6	7409	4,406	1,310	168	1381	7265	144
12.7	7468	4,406	1,321	168	1381	7276	192
12.8	7526	4,406	1,331	168	1381	7287	240
12.9	7585	4,406	1,342	169	1381	7297	288
13.0	7644	4,406	1,352	169	1381	7308	336

Breakeven yield to cover total annual costs is 12.3 tonnes / acre

(Includes annualized establishment costs, does not include land costs)



# LABRUSCA GRAPES



# 5. Concord

## Mature Vineyard: Annual Costs

	Your Farm	Cost per acre (\$)	
		Yield	Yield
		3.5 Tonne	5 Tonne
<b>Variable Costs</b>			
Labour: Hand, 3 hrs		37	37
Machine Operator 20.0 hrs		344	344
Fertilizer: Ammonium Nitrate, 81 kg		66	66
Muriate of Potash, 94 kg		110	110
Insecticides		66	66
Fungicides		230	230
Herbicides		56	56
Replacement Vines 1%		23	23
Cover crop seed		23	23
Wind Machine		0	0
Machine Costs: Repairs & maintenance		113	113
Fuel		171	171
Custom pruning \$.33/vine		240	240
Custom Tying - \$.23/vine		167	167
Tying Material		25	25
Irrigation		0	0
Bird Control		0	0
Custom harvest/delivery		284	405
Marketing board fees		35	50
Crop Insurance		113	130
Consulting Fees (soil, leaf, spray)		32	32
Interest on operating capital		69	74
Land rental			
<b>Total Variable Costs</b>		<b>2204</b>	<b>2362</b>
<b>Fixed Costs</b>			
Machine Costs: Depreciation		173	173
Interest on investment		38	38
Other overhead		214	214
Land ownership			
<b>Measurable Fixed Costs</b>		<b>425</b>	<b>425</b>
<b>Total Measurable Cost</b>		<b>2629</b>	<b>2787</b>
<b>Contribution Margin</b>			
Gross Income (\$418 per tonne)		1463	2090
Total Variable Costs		2204	2362
<b>Contribution Margin (no land costs)</b>		<b>-741</b>	<b>-272</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	3.0	37			37
Shoot Thinning	0.0	0			0
Shoot Positioning, Tucking	0.0	0			0
Leaf Removal	0.0	0			0
Bunch Thinning	0.0	0			0
Other operations	0.0	0			0
Trellis Maintenance	0.0	0			0
<b>Total Hand Labour</b>	<b>3.0</b>	<b>37</b>			<b>37</b>
<b>Machine</b>					
Weed Control: Spraying (3x)	2.2	38	28	16	82
Discing (2x)	1.9	33	30	28	91
Cultivation (2x)	1.9	33	26	17	75
Pesticide Spraying (4x)	1.8	31	38	39	108
Fertilizing (2x)	1.0	17	13	11	41
Sow cover crop	1.0	17	18	27	62
Mowing (4x)	2.8	48	37	22	107
Hilling up and removal	0.0	0	0	0	0
Subsoiling/Aerating	1.3	22	20	14	56
Vineyard Maintenance	1.6	28	20	11	58
Replacing vines	2.2	38	26	14	78
Canopy Management: Machine Hedging	0.0	0	0	0	0
Canopy Management: Leaf Pulling	0.0	0	0	0	0
Brush Removal/flail	2.3	40	28	14	81
<b>Total Machine Operator</b>	<b>20.0</b>	<b>344</b>	<b>284</b>	<b>211</b>	<b>839</b>

\*Includes maintenance, fuel and repair