



# **Establishment & Production Costs for Grapes in Ontario 2019 Economic Report**

Ministry of Agriculture,  
Food and Rural Affairs

Ontario 



# **Establishment and Production Costs for Grapes in Ontario 2019 Economic Report**

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# Table of Contents

## 1. Introduction

Objectives .....	1
Methods and Procedures .....	1
Assumptions .....	1
Changes for the 2019 Economic Report.....	2

## Vinifera and Hybrid Grapes

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### 2. Cabernet Franc

Preplant year .....	4
Planting year .....	5
Second year .....	7
Third year.....	9
Fourth year.....	11
Total establishment cost .....	12
Mature vineyard: Annual costs.....	13
Table 1. Break even and profitability worksheet .....	15
Table 2. Break even yield to cover variable costs .....	16
Table 3. Break even yield to cover total costs .....	16
Graph 1: Cost of production 1997 - 2019 - Low yield .....	17
Graph 2: Cost of production 1997 - 2019 - High yield.....	17

### 3. Chardonnay

Preplant year .....	18
Planting year .....	19
Second year .....	21
Third year.....	23
Fourth year.....	25
Total establishment cost .....	26
Mature vineyard: Annual costs.....	27
Table 4. Break even and profitability worksheet .....	29
Table 5. Break even yield to cover variable costs .....	30
Table 6. Break even yield to cover total costs .....	30
Graph 3: Cost of production 1997 - 2019 - Low yield .....	31
Graph 4: Cost of production 1997 - 2019 - High yield.....	31

### 4. Vidal

Preplant year .....	32
Planting year .....	33
Second year .....	35
Third year.....	37
Fourth year.....	39
Total establishment cost .....	40
Mature vineyard: Annual costs.....	41
Table 7. Break even and profitability worksheet .....	43
Table 8. Break even yield to cover variable costs .....	44
Table 9. Break even yield to cover total costs .....	44
Graph 5: Cost of production 1997 - 2019 - Low yield .....	45
Graph 6: Cost of production 1997 - 2019 - High yield .....	45

# 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.

Three grape cultivars are summarized in this document; Vidal, Chardonnay and Cabernet Franc which reflect some of the most significant cultivars in Ontario. They represent French Hybrid and Vinifera varieties 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. The information provided benefits new growers by providing them with information on the economic costs of planting and maintaining a vineyard.

## 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.

Growers were asked to provide information based on a typical year. All costs are based on the production of VQA quality wines.

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.

Production practices included in this report are based on traditional grape growing areas and will not include additional costs for burying vines etc.

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 \$16.65 per hour, which includes benefits (Workers' Compensation, Employment Insurance and Canada Pension Plan). A blended base price of \$16.65 is used to reflect the workforce in the grape industry, which is made up of both local and offshore labour. Offshore labour includes an allowance for additional costs such as air flight, housing, local transportation.

Hired machine operator labour is charged at \$ 26.20 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 2019, useful life, annual use and trade-in value.

Interest on investment is calculated at 3.0%, 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 3.95% plus 1.0% = 4.95%.

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 \$1.10 per litre and diesel \$1.00 per litre. Fuel costs are net of all 2019 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 2019 minimum negotiated price for each cultivar sold through the Grape Growers of Ontario.

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.

The training system for Vinifera grapes is a vertical shoot position system (i.e. Pendelbogen), while 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 3.0%.

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.

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, al-

ternative training systems and other innovative cultural practices.

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

### **Changes for the 2019 Economic Report**

The Concord grape cultivar was not included in the 2019 report due to a declining market for labrusca grape varieties.

Yields – High yield for Vidal was decreased from 2014 to 9.5 tonnes (- 0.5t decrease).

Custom ploughing was combined into Land Preparation in the pre plant year.

Minimum wage in Ontario increased from \$11 to \$14 per hour from 2014 to 2019. Hand labour wages in this report rose 23.8% while skilled machine operator wages climbed 27.2% since 2014.

Based on the Nebraska Tractor Test Laboratory results from 2008 to 2017, the fuel consumption rate was increased from 0.167 litres per HP-hour to 0.244 litres per HP-hour.

An additional 90 hp tractor was included in the machinery investment inventory.

Gross revenue per tonne increased an average of 4% since 2014 for the wine grape varieties.

Calcium ammonium nitrate replaced Ammonium nitrate as the nitrogen fertilizer source.

The Cost of Production graphs in the 2014 report were in nominal dollars, in 2019 all years have been adjusted for inflation to be reported in 2019 dollars. This provides a more accurate reflection of how revenue and costs have changed over time.

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# VINIFERA AND HYBRID GRAPES



## 2. Cabernet Franc

### Preplant Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Machinery operator, 4.5 hrs		118
Cover crop		38
Machine costs :Repairs and maintenance		36
Fuel		91
Consulting fees		80
Land rental		
Land preparation (levelling etc.)		1607
Tile drainage (9 foot)		4588
Interest on operating capital		162
<b>Total Variable Costs</b>		<b>6558</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		56
Interest on investment		16
Other overhead		270
Land ownership		
<b>Measurable Fixed Costs</b>		<b>342</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>6899</b>

### Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine:</b>					
Discing, cultivating (3.5x)	2.8	73	80	52	205
Sub soiling	1.0	26	27	14	68
Sow cover crop	0.7	18	20	14	53
<b>Total Machinery Operator</b>	<b>4.5</b>	<b>118</b>	<b>127</b>	<b>80</b>	<b>325</b>

\*Includes maintenance, fuel and repair

## Planting Year

	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 29.0 hrs		483
Machine operator, 20.1 hrs		527
Fertilizer: Calcium ammonium nitrate 0 kg		0
Muriate of potash, 0 kg		0
Insecticides		0
Fungicides		28
Grape vines		3811
Custom trellis: Materials, labour		6243
Training: Stakes, material		950
Cover crop seed		38
Machine costs: Repairs and maintenance		209
Fuel		392
Custom planting		792
Irrigation		287
Consulting fees		80
Interest on operating capital		1010
Land rental		
<b>Total Variable Costs</b>		<b>14848</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		297
Interest on investment		84
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>921</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>15769</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	15.0	250			250
<b>Total Hand Labour</b>	<b>29.0</b>	<b>483</b>			<b>483</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (4x)	1.3	34	53	55	142
Fertilizing (0x)	0.0	0	0	0	0
Sow cover crop	0.7	18	20	16	54
Mowing (4x)	2.8	73	78	47	198
Hilling up	1.5	39	41	25	105
Vineyard maintenance	3.0	79	88	55	222
Picking up vines & supplies	2.0	52	49	24	126
<b>Total Machinery Operator</b>	<b>20.1</b>	<b>527</b>	<b>600</b>	<b>427</b>	<b>1554</b>

\*Includes maintenance, fuel and repair

## Second Year

	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 30.0 hr		500
Machine operator, 25.0 hr		655
Fertilizer: Calcium ammonium nitrate, 0 kg		0
Muriate of potash, 0 kg		0
Insecticides		61
Fungicides		204
Herbicides		39
Replacement vines, 2%		112
Cover crop seed		19
Machine costs: Repairs and maintenance		258
Fuel		473
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Consulting fees		80
Interest on operating capital		1237
Land rental		
<b>Total Variable Costs</b>		<b>4825</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		365
Interest on investment		107
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1012</b>
<b>Total Measurable "Second Year" Costs</b>		<b>5837</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed Control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	16.0	266			266
<b>Total Hand Labour</b>	<b>30.0</b>	<b>500</b>			<b>500</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Spraying (2x)	1.4	37	38	21	96
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (8x)	2.6	68	107	110	285
Fertilizing (0x)	0.0	0	0	0	0
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	51	25	154
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	2.0	52	59	37	148
<b>Total Machinery Operator</b>	<b>25.0</b>	<b>655</b>	<b>731</b>	<b>526</b>	<b>1913</b>

\*Includes maintenance, fuel and repair

## Third Year

1.25 tonne (25% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 63.0 hrs		1049
Machine operator, 28.1 hrs		736
Fertilizer: Calcium ammonium nitrate, 12 kg		9
Muriate of potash, 40 kg		28
Insecticides		121
Fungicides		401
Herbicides		50
Replacement vines, 1%		56
Cover crop seed		19
Machine Costs: Repairs and maintenance		307
Fuel		586
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Bird control		212
Board license and R&D fees (\$21.45 per tonne)		27
Crop insurance		79
Consulting fees (soil,leaf, spray)		80
Interest on operating capital		1543
Land rental		
<b>Total Variable Costs</b>		<b>6490</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		412
Interest on investment		128
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1080</b>
<b>Total Measurable "Third Year" Costs</b>		<b>7570</b>
<b>Contribution Margin</b>		
Gross Income (\$1830 per tonne)		2288
Total Variable Costs		6490
<b>Contribution Margin (no land costs)</b>		<b>-4203</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	7.0	117			117
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	12.0	200			200
Bunch thinning	12.0	200			200
Other operations	2.0	33			33
Hand harvest	10.0	167			167
<b>Total Hand Labour</b>	<b>63.0</b>	<b>1049</b>			<b>1049</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	105	164	169	438
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	87	75	214
Harvest pick up and delivery	5.0	131	163	58	352
<b>Total Machinery Operator</b>	<b>28.1</b>	<b>736</b>	<b>893</b>	<b>605</b>	<b>2234</b>

\*Includes maintenance, fuel and repair

## Fourth Year

2.5 tonne (50% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 60.0 hrs		999
Machine operator, 23.1 hrs		605
Fertilizer: Calcium ammonium nitrate, 31 kg		23
Muriate of potash, 50 kg		35
Insecticides		183
Fungicides		610
Herbicides		50
Replacement vines, 1%		56
Cover crop seed		19
Machine costs: Repairs and maintenance		266
Fuel		445
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Bird control		212
Custom harvest/delivery		248
Board license and R&D fees (\$21.45 per tonne)		54
Crop insurance		158
Consulting fees (soil, leaf, spray)		80
Interest on operating capital		1765
Land rental		
<b>Total Variable Costs</b>		<b>6995</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		376
Interest on investment		114
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1030</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>8025</b>
<b>Contribution Margin</b>		
Gross Income (\$1830 per tonne)		4575
Total Variable Costs		6995
<b>Contribution Margin (no land costs)</b>		<b>-2420</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	9.0	150			150
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	12.0	200			200
Bunch thinning	15.0	250			250
Other operations	4.0	67			67
<b>Total Hand Labour</b>	<b>60.0</b>	<b>999</b>			<b>999</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	105	164	169	438
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	67	75	194
<b>Total Machinery Operator</b>	<b>23.1</b>	<b>605</b>	<b>711</b>	<b>547</b>	<b>1862</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant year		6899
Planting year		15769
Second year		5837
Third year		6998
Fourth year		7709
<b>Total</b>		<b>43212</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>2189 per year</b>

(amortized over remaining 21 years of vineyard life)

## Mature Vineyard: Annual cost

		Cost per acre (\$)	
	Your Farm	Yield	Yield
Variable Costs		3.5 Tonne	5 Tonne
Labour: Hand, 63 hrs		1049	1049
Machine operator 30.9 hrs		809	809
Fertilizer: Calcium ammonium nitrate, 37 kg		27	27
Muriate of potash, 60 kg		41	41
Insecticides		183	183
Fungicides		610	610
Herbicides		50	50
Replacement vines 1%		56	56
Cover crop seed		19	19
Wind machine		389	389
Machine costs: Repairs & maintenance		383	383
Fuel		621	621
Custom pruning \$.48/vine		581	581
Custom tying - \$.24/vine		290	290
Tying material		29	29
Irrigation		287	287
Bird control		212	212
Custom harvest/delivery		347	495
Board license and R&D fees (\$21.45 per tonne)		75	107
Crop insurance		222	317
Consulting fees (soil, leaf, spray)		80	80
Interest on operating capital		315	328
Land rental			
<b>Total Variable Costs</b>		<b>6675</b>	<b>6964</b>
<b>Fixed Costs</b>			
Machine costs: Depreciation		514	514
Interest on investment		179	179
Other overhead		540	540
Land ownership			
<b>Measurable Fixed Costs</b>		<b>1233</b>	<b>1233</b>
<b>Total Measurable Cost</b>		<b>7908</b>	<b>8197</b>
<b>Contribution Margin</b>			
Gross Income (\$1830 per tonne)		6405	9150
Total Variable Costs		6675	6964
<b>Contribution Margin (no land costs)</b>		<b>-270</b>	<b>2186</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	9.0	150			150
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	13.0	216			216
Bunch thinning	17.0	283			283
Other operations	4.0	67			67
<b>Total Hand Labour</b>	<b>63.0</b>	<b>1049</b>			<b>1049</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	104	163	167	434
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Subsoiling/aerating	1.0	26	27	35	88
Vineyard maintenance	5.0	131	146	92	370
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.5	66	108	94	268
Pre-pruning	0.8	21	37	34	92
Leaf removal (3.0x)	2.0	52	85	69	207
Brush shredding/flail	1.5	39	45	33	117
<b>Total Machinery Operator</b>	<b>30.9</b>	<b>809</b>	<b>1004</b>	<b>771</b>	<b>2583</b>

\*Includes maintenance, fuel and repair

## Table 1. 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	6554	342	6896	-6896	-6896
Planting	0%	0	14848	921	15769	-15769	-22664
2	0%	0	4825	1012	5837	-5837	-28501
3	25%	2288	6491	1080	7570	-5283	-33784
4	50%	4575	6995	1030	8025	-3450	-37234
5	100%	6405	8301	1233	9534	-3129	-40363
6	100%	6405	8395	1233	9628	-3223	-43586
7	100%	6405	8493	1233	9726	-3321	-46907
8	100%	6405	8597	1233	9830	-3425	-50331
9	100%	6405	8705	1233	9938	-3533	-53865
10	100%	6405	8819	1233	10052	-3647	-57511
11	100%	6405	8938	1233	10171	-3766	-61278
12	100%	6405	9064	1233	10297	-3892	-65170

There is no breakeven at the 3.5 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	6554	342	6896	-6896	-6896
Planting	0%	0	14848	921	15769	-15769	-22664
2	0%	0	4825	1012	5837	-5837	-28501
3	25%	2288	6491	1080	7570	-5283	-33784
4	50%	4575	6995	1030	8025	-3450	-37234
5	100%	9150	8591	1233	9824	-674	-37908
6	100%	9150	8563	1233	9796	-646	-38553
7	100%	9150	8534	1233	9767	-617	-39170
8	100%	9150	8503	1233	9736	-586	-39757
9	100%	9150	8471	1233	9704	-554	-40311
10	100%	9150	8438	1233	9671	-521	-40831
11	100%	9150	8402	1233	9635	-485	-41317
12	100%	9150	8365	1233	9598	-448	-41765

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

## Table 2. Break Even Yield to Cover Variable Costs

Yield MT/ac	Revenue	Variable costs excluding harvest and operating interest costs	Harvest costs	Operating interest	Total Variable Costs	Contribution Margin
2.9	5,307	5,986	349	311	6,646	-1,339
3.0	5,490	5,986	361	312	6,659	-1,169
3.1	5,673	5,986	373	312	6,672	-999
3.2	5,856	5,986	385	313	6,684	-828
3.3	6,039	5,986	397	314	6,697	-658
3.4	6,222	5,986	410	314	6,710	-488
3.5	6,405	5,986	422	315	6,722	-317
3.6	6,588	5,986	434	315	6,735	-147
<b>3.7</b>	<b>6,771</b>	<b>5,986</b>	<b>446</b>	<b>316</b>	<b>6,748</b>	<b>23</b>
3.8	6,954	5,986	458	317	6,760	194
3.9	7,137	5,986	470	317	6,773	364
4.0	7,320	5,986	482	318	6,786	534
4.1	7,503	5,986	494	318	6,798	705
4.2	7,686	5,986	506	319	6,811	875

Breakeven yield to cover annual variable costs is 3.7 tonnes / acre.

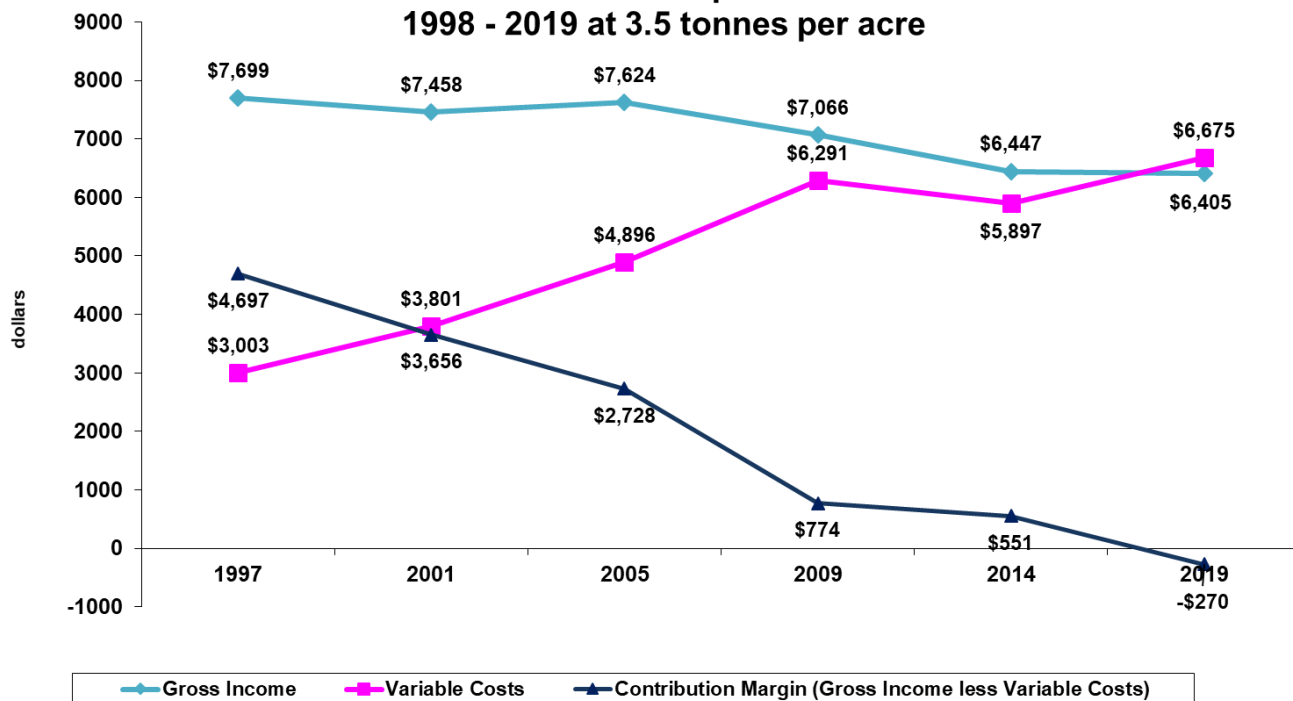
## Table 3. Break Even Yield to Cover Total Costs

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
5.0	9150	7,219	602	324	2189	10334	-1184
5.1	9333	7,219	614	324	2189	10347	-1014
5.2	9516	7,219	626	325	2189	10359	-843
5.3	9699	7,219	638	326	2189	10372	-673
5.4	9882	7,219	650	326	2189	10385	-503
5.5	10065	7,219	662	327	2189	10397	-332
5.6	10248	7,219	675	327	2189	10410	-162
<b>5.7</b>	<b>10431</b>	<b>7,219</b>	<b>687</b>	<b>328</b>	<b>2189</b>	<b>10422</b>	<b>9</b>
5.8	10614	7,219	699	329	2189	10435	179
5.9	10797	7,219	711	329	2189	10448	349
6.0	10980	7,219	723	330	2189	10460	520
6.1	11163	7,219	735	330	2189	10473	690
6.2	11346	7,219	747	331	2189	10486	860
6.3	11529	7,219	759	332	2189	10498	1031

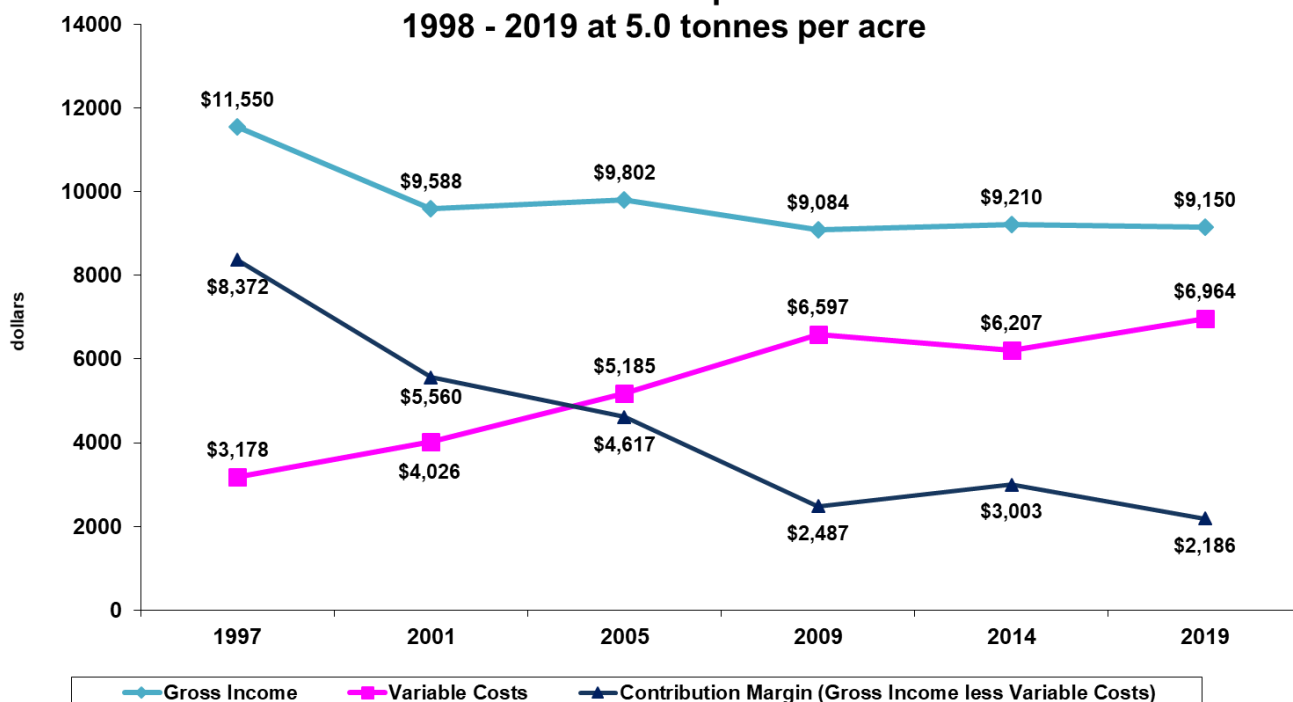
Breakeven yield to cover total annual costs is 5.7 tonnes / acre.

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

**Graph 1. Cabernet Franc Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997 at 3.0 tonnes per acre and  
1998 - 2019 at 3.5 tonnes per acre



**Graph 2. Cabernet Franc Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997 at 4.5 tonnes per acre and  
1998 - 2019 at 5.0 tonnes per acre



### 3. Chardonnay

#### Preplant Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Machinery operator, 4.5 hrs		118
Cover crop		38
Machine costs: Repairs and maintenance		36
Fuel		91
Consulting fees		80
Land rental		
Land preparation (levelling etc.)		1607
Tile drainage (9 foot)		4588
Interest on operating capital		162
<b>Total Variable Costs</b>		<b>6558</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		56
Interest on investment		16
Other overhead		270
Land ownership		
<b>Measurable Fixed Costs</b>		<b>342</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>6899</b>

#### Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine</b>					
Discing, cultivating (3.5x)	2.8	73	80	52	205
Sub soiling	1.0	26	27	14	68
Sow cover crop	0.7	18	20	14	53
<b>Total Machinery Operator</b>	<b>4.5</b>	<b>118</b>	<b>127</b>	<b>80</b>	<b>325</b>

\*Includes maintenance, fuel and repair

## Planting Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 29.0 hrs		483
Machine operator, 20.1 hrs		527
Fertilizer: Calcium ammonium nitrate 0 kg		0
Muriate of potash, 0 kg		0
Insecticides		0
Fungicides		28
Grape vines		3811
Custom trellis: Materials, labour		6243
Training: Stakes, material		950
Cover crop seed		38
Machine costs: Repairs and maintenance		209
Fuel		392
Custom planting		792
Irrigation		287
Consulting fees		80
Interest on operating capital		1010
Land rental		
<b>Total Variable Costs</b>		<b>14849</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		297
Interest on investment		84
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>921</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>15770</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	15.0	250			250
<b>Total Hand Labour</b>	<b>29.0</b>	<b>483</b>			<b>483</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (4x)	1.3	34	53	55	142
Fertilizing (0x)	0.0	0	0	0	0
Sow cover crop	0.7	18	20	16	54
Mowing (4x)	2.8	73	78	47	198
Hilling up	1.5	39	41	25	105
Vineyard maintenance	3.0	79	88	55	222
Picking up vines & supplies	2.0	52	49	24	126
<b>Total Machinery Operator</b>	<b>20.1</b>	<b>527</b>	<b>600</b>	<b>427</b>	<b>1554</b>

\*Includes maintenance, fuel and repair

## Second Year

Variable Costs	Cost per acre (\$)	
	Actual	Budget
Labour: Hand, 30.0 hr		500
Machine operator, 25.0 hr		655
Fertilizer: Calcium ammonium nitrate, 0 kg		0
Muriate of potash, 0 kg		0
Insecticides		61
Fungicides		204
Herbicides		39
Replacement vines, 2%		112
Cover crop seed		19
Machine costs: Repairs and maintenance		258
Fuel		473
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Consulting fees		80
Interest on operating capital		1237
Land rental		
<b>Total Variable Costs</b>		<b>4825</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		365
Interest on investment		107
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1012</b>
<b>Total Measurable "Second Year" Costs</b>		<b>5837</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	16.0	266			266
<b>Total Hand Labour</b>	<b>30.0</b>	<b>500</b>			<b>500</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Spraying (2x)	1.4	37	38	21	96
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (8x)	2.6	68	107	110	285
Fertilizing (0x)	0.0	0	0	0	0
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	51	25	154
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	2.0	52	59	37	148
<b>Total Machinery Operator</b>	<b>25.0</b>	<b>655</b>	<b>731</b>	<b>526</b>	<b>1913</b>

\*Includes maintenance, fuel and repair

## Third Year

1.5 tonne (25% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 63.0 hrs		1049
Machine operator, 28.1 hrs		736
Fertilizer: Calcium ammonium nitrate, 12 kg		9
Muriate of potash, 40 kg		28
Insecticides		121
Fungicides		401
Herbicides		50
Replacement vines, 1%		56
Cover crop seed		19
Machine costs: Repairs and maintenance		307
Fuel		586
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Bird control		105
Board license and R&D fees (\$19.90 per tonne)		30
Crop insurance		83
Consulting fees (soil, leaf, spray)		80
Interest on operating capital		1538
Land rental		
<b>Total Variable Costs</b>		<b>6386</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		412
Interest on investment		128
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1080</b>
<b>Total Measurable "Third Year" Costs</b>		<b>7456</b>
<b>Contribution Margin</b>		
Gross Income (\$1580 per tonne)		2370
Total Variable Costs		6386
<b>Contribution Margin (no land costs)</b>		<b>-4016</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	7.0	117			117
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	12.0	200			200
Bunch thinning	12.0	200			200
Other operations	2.0	33			33
Hand harvest	10.0	167			167
<b>Total Hand Labour</b>	<b>63.0</b>	<b>1049</b>			<b>1049</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	105	164	169	438
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	87	75	214
Harvest pick up and delivery	5.0	131	163	58	352
<b>Total Machinery Operator</b>	<b>28.1</b>	<b>736</b>	<b>893</b>	<b>605</b>	<b>2234</b>

\*Includes maintenance, fuel and repair

## Fourth Year

3 tonne (50% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 60.0 hrs		999
Machine operator, 23.1 hrs		605
Fertilizer: Calcium ammonium nitrate, 31 kg		23
Muriate of potash, 50 kg		35
Insecticides		183
Fungicides		610
Herbicides		50
Replacement vines, 1%		56
Cover crop seed		19
Machine Costs: Repairs and maintenance		266
Fuel		445
Custom pruning - \$.48/vine		581
Custom tying - \$.24/vine		290
Tying material		29
Irrigation		287
Bird control		105
Custom harvest/delivery		297
Board license and R&D fees (\$19.90 per tonne)		60
Crop insurance		167
Consulting fees (soil, leaf, spray)		80
Interest on operating capital		1754
Land rental		
<b>Total Variable Costs</b>		<b>6941</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		376
Interest on investment		114
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1030</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>7971</b>
<b>Contribution Margin</b>		
Gross Income (\$1580) per tonne)		4740
Total Variable Costs		6941
<b>Contribution Margin (no land costs)</b>		<b>-2201</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	9.0	150			150
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	12.0	200			200
Bunch thinning	15.0	250			250
Other operations	4.0	67			67
<b>Total Hand Labour</b>	<b>60.0</b>	<b>999</b>			<b>999</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	105	164	169	438
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	67	75	194
<b>Total Machinery Operator</b>	<b>23.1</b>	<b>605</b>	<b>711</b>	<b>547</b>	<b>1862</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant year		6899
Planting year		15770
Second year		5837
Third year		6890
Fourth year		7596
<b>Total</b>		<b>42992</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		2165 per year

(amortized over remaining 21 years of vineyard life)

## Mature Vineyard: Annual Costs

		Cost per acre (\$)	
	Your Farm	Yield	Yield
Variable Costs		4 Tonne	6 Tonne
Labour: Hand, 63.0 hrs		1049	1049
Machine operator 30.9 hrs		809	809
Fertilizer: Calcium ammonium nitrate, 37 kg		27	27
Muriate of potash, 60 kg		42	42
Insecticides		183	183
Fungicides		610	610
Herbicides		50	50
Replacement vines 1%		56	56
Cover crop seed		19	19
Wind machine		389	389
Machine costs: Repairs & maintenance		383	383
Fuel		621	621
Custom pruning \$.48/vine		581	581
Custom tying - \$.24/vine		290	290
Tying material		29	29
Irrigation		287	287
Bird control		105	105
Custom harvest/delivery		396	594
Board license and R&D fees (\$19.90 per tonne)		80	119
Crop insurance		222	333
Consulting fees (soil, leaf, spray)		80	80
Interest on operating capital		312	330
Land rental			
<b>Total Variable Costs</b>		<b>6620</b>	<b>6987</b>
<b>Fixed Costs</b>			
Machine costs: Depreciation		514	514
Interest on investment		179	179
Other overhead		540	540
Land ownership			
<b>Measurable Fixed Costs</b>		<b>1233</b>	<b>1233</b>
<b>Total Measurable Cost</b>		<b>7853</b>	<b>8220</b>
<b>Contribution Margin</b>			
Gross Income (\$1580 per tonne)		6320	9480
Total Variable Costs		6620	6987
<b>Contribution Margin (no land costs)</b>		<b>-300</b>	<b>2493</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	9.0	150			150
Shoot thin, positioning, tucking	20.0	333			333
Leaf removal	13.0	216			216
Bunch thinning	17.0	283			283
Other operations	4.0	67			67
<b>Total Hand Labour</b>	<b>63.0</b>	<b>1049</b>			<b>1049</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	104	163	167	434
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	3.0	79	81	50	209
Subsoiling/aerating	1.0	26	27	35	88
Vineyard maintenance	5.0	131	146	92	370
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.5	66	108	94	268
Pre pruning	0.8	21	37	34	92
Leaf removal (2.0x)	2.0	52	85	69	207
Brush shredding/flail	1.5	39	45	33	117
<b>Total Machinery Operator</b>	<b>30.9</b>	<b>809</b>	<b>1004</b>	<b>771</b>	<b>2583</b>

\*Includes maintenance, fuel and repair

## Table 4. 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	6554	342	6896	-6896	-6896
Planting	0%	0	14848	921	15769	-15769	-22665
2	0%	0	4825	1012	5837	-5837	-28501
3	25%	2370	6386	1080	7466	-5096	-33597
4	50%	4740	6941	1030	7971	-3231	-36827
5	100%	6320	8226	1233	9459	-3139	-39967
6	100%	6320	8321	1233	9554	-3234	-43200
7	100%	6320	8420	1233	9653	-3333	-46533
8	100%	6320	8524	1233	9756	-3436	-49969
9	100%	6320	8633	1233	9866	-3546	-53515
10	100%	6320	8747	1233	9980	-3660	-57175
11	100%	6320	8867	1233	10100	-3780	-60955
12	100%	6320	8993	1233	10226	-3906	-64861

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

### 6 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	6554	342	6896	-6896	-6896
Planting	0%	0	14848	921	15769	-15769	-22665
2	0%	0	4825	1012	5837	-5837	-28501
3	25%	2370	6386	1080	7466	-5096	-33597
4	50%	4740	6941	1030	7971	-3231	-36827
5	100%	9480	8592	1233	9825	-345	-37173
6	100%	9480	8549	1233	9782	-302	-37474
7	100%	9480	8502	1233	9735	-255	-37730
8	100%	9480	8454	1233	9687	-207	-37937
9	100%	9480	8403	1233	9636	-156	-38093
10	100%	9480	8350	1233	9583	-103	-38196
11	100%	9480	8294	1233	9527	-47	-38243
12	100%	9480	8235	1233	9468	12	-38231

There is no breakeven at the 6 tonne/acre yield level (does not include land costs).

**Table 5. Break Even Yield to Cover 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	5,056	5,888	380	308	6,576	-1,520
3.3	5,214	5,888	392	308	6,588	-1,374
3.4	5,372	5,888	404	309	6,601	-1,229
3.5	5,530	5,888	416	309	6,613	-1,083
3.6	5,688	5,888	428	310	6,626	-938
3.7	5,846	5,888	440	310	6,638	-792
3.8	6,004	5,888	452	311	6,651	-647
3.9	6,162	5,888	464	312	6,663	-501
4.0	6,320	5,888	476	312	6,676	-356
4.1	6,478	5,888	487	313	6,688	-210
4.2	6,636	5,888	499	313	6,701	-65
<b>4.3</b>	<b>6,794</b>	<b>5,888</b>	<b>511</b>	<b>314</b>	<b>6,713</b>	<b>81</b>
4.4	6,952	5,888	523	315	6,726	226
4.5	7,110	5,888	535	315	6,738	372

Breakeven yield to cover annual variable costs is 4.3 tonnes / acre.

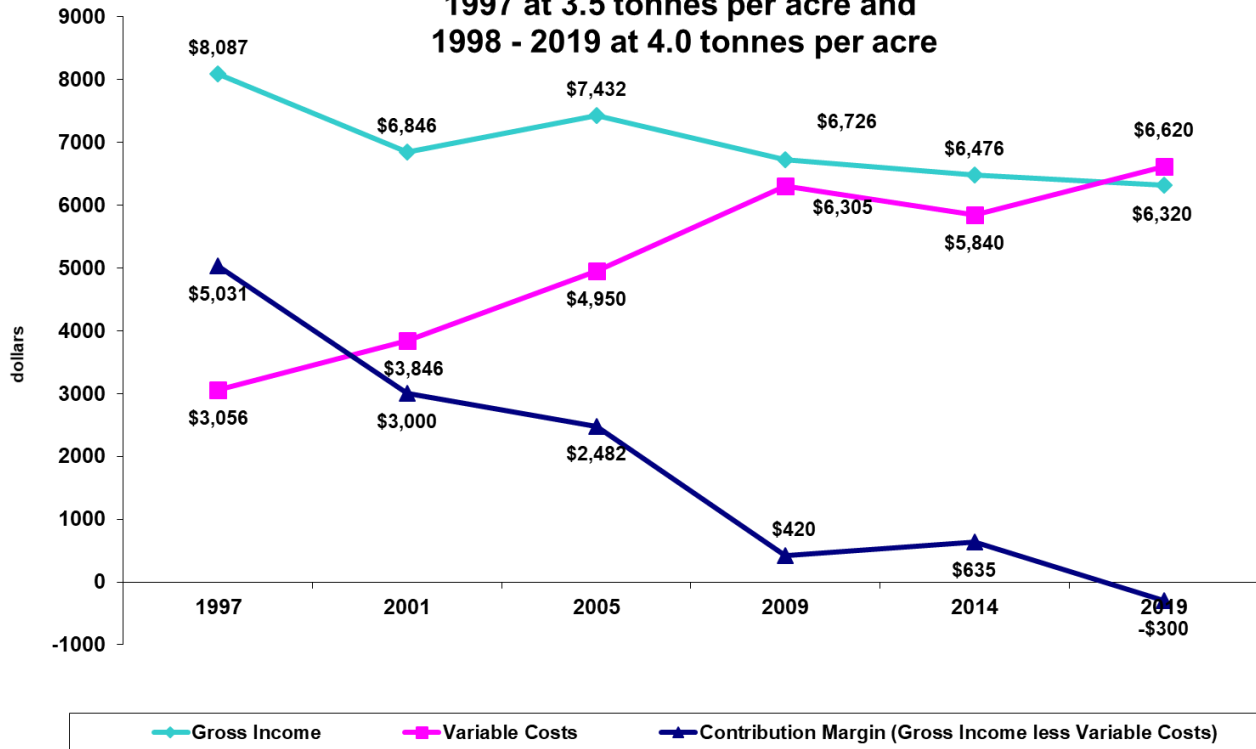
**Table 6. Break Even Yield to Cover Total Costs**

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
5.7	9006	7,121	678	322	2165	10286	-1280
5.8	9164	7,121	690	323	2165	10299	-1135
5.9	9322	7,121	702	323	2165	10311	-989
6.0	9480	7,121	713	324	2165	10324	-844
6.1	9638	7,121	725	325	2165	10336	-698
6.2	9796	7,121	737	325	2165	10348	-552
6.3	9954	7,121	749	326	2165	10361	-407
6.4	10112	7,121	761	326	2165	10373	-261
6.5	10270	7,121	773	327	2165	10386	-116
<b>6.6</b>	<b>10428</b>	<b>7,121</b>	<b>785</b>	<b>328</b>	<b>2165</b>	<b>10398</b>	<b>30</b>
6.7	10586	7,121	797	328	2165	10411	175
6.8	10744	7,121	809	329	2165	10423	321
6.9	10902	7,121	820	329	2165	10436	466
7.0	11060	7,121	832	330	2165	10448	612

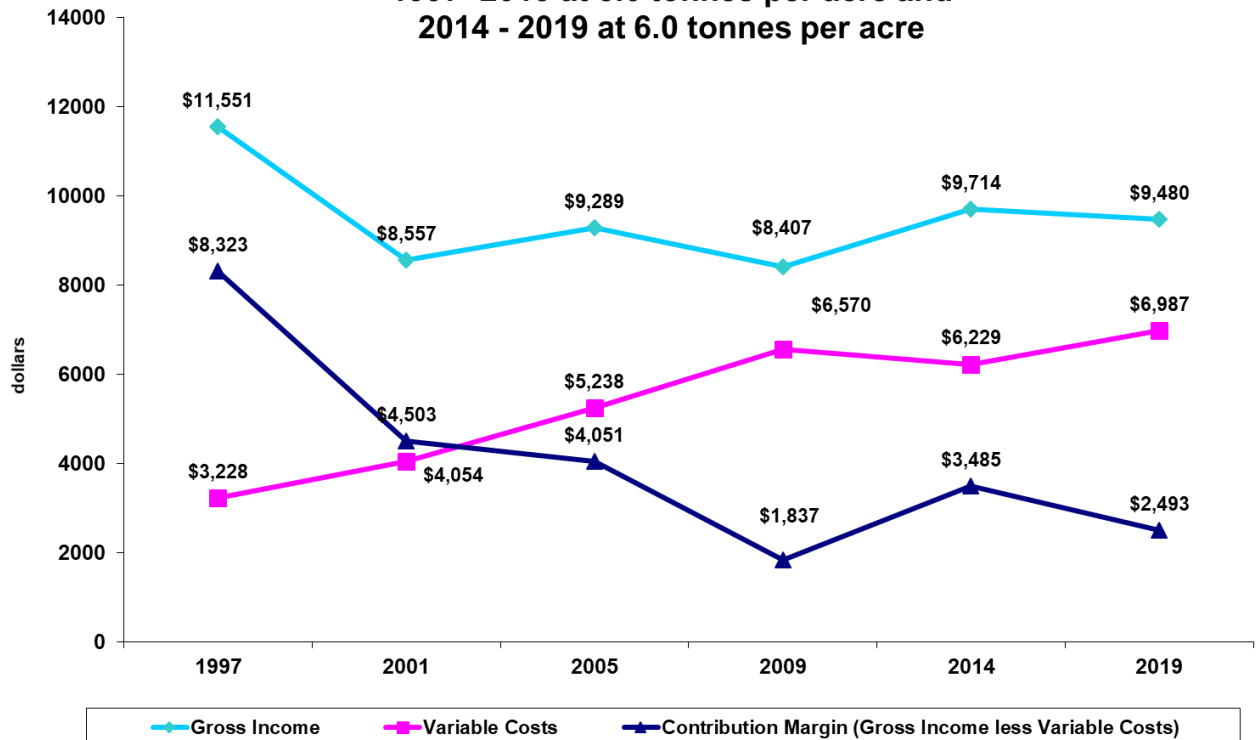
Breakeven yield to cover total annual costs is 6.6 tonnes / acre.

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

**Graph 3. Chardonnay Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997 at 3.5 tonnes per acre and  
1998 - 2019 at 4.0 tonnes per acre



**Graph 4. Chardonnay Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997- 2013 at 5.0 tonnes per acre and  
2014 - 2019 at 6.0 tonnes per acre



## 4. Vidal

### Preplant Year

	Cost per acre (\$)	
	Actual	Budget
<b>Variable Costs</b>		
Labour: Machinery operator, 4.5 hrs		118
Cover crop		38
Machine costs: Repairs and maintenance		36
Fuel		91
Consulting fees		62
Land rental		
Land preparation (levelling etc.)		1607
Tile drainage (9 foot)		4588
Interest on operating capital		162
<b>Total Variable Costs</b>		<b>6540</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		56
Interest on investment		16
Other overhead		270
Land ownership		
<b>Measurable Fixed Costs</b>		<b>342</b>
<b>Total Measurable "Preplant Year" Costs</b>		<b>6881</b>

### Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Machine</b>					
Discing, cultivating (3.5x)	2.8	73	80	52	205
Sub soiling	1.0	26	27	14	68
Sow cover crop	0.7	18	20	14	53
<b>Total Machinery Operator</b>	<b>4.5</b>	<b>118</b>	<b>127</b>	<b>80</b>	<b>325</b>

\*Includes maintenance, fuel and repair

## Planting Year

	Cost per acre (\$)	
	Actual	Budget
<b>Variable Costs</b>		
Labour: Hand, 29.0 hrs		483
Machine operator, 18.6 hrs		487
Fertilizer: Calcium ammonium nitrate 0 kg		0
Muriate of potash, 0 kg		0
Insecticides		0
Fungicides		28
Grape vines		3049
Custom trellis: Materials, labour		6242
Training: Stakes, material		760
Cover crop seed		38
Machine costs: Repairs and maintenance		198
Fuel		362
Custom planting		687
Irrigation		287
Consulting fees		62
Interest on operating capital		952
Land rental		
<b>Total Variable Costs</b>		<b>13635</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		280
Interest on investment		79
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>899</b>
<b>Total Measurable "Planting Year" Costs</b>		<b>14534</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	15.0	250			250
<b>Total Hand Labour</b>	<b>29.0</b>	<b>483</b>			<b>483</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (4x)	1.3	34	53	55	142
Fertilizing (0x)	0.0	0	0	0	0
Sow cover crop	0.7	18	20	16	54
Mowing (4x)	2.8	73	78	47	198
Hilling up	0.0	0	0	0	0
Vineyard maintenance	3.0	79	88	55	222
Picking up vines & supplies	2.0	52	49	24	126
<b>Total Machinery Operator</b>	<b>18.6</b>	<b>487</b>	<b>560</b>	<b>402</b>	<b>1449</b>

\*Includes maintenance, fuel and repair

## Second Year

	Cost per acre (\$)	
<b>Variable Costs</b>	<b>Actual</b>	<b>Budget</b>
Labour: Hand, 29.0 hr		483
Machine operator, 23.0 hr		603
Fertilizer: Calcium ammonium nitrate, 25 kg		18
Muriate of potash, 20 kg		14
Insecticides		61
Fungicides		204
Herbicides		39
Replacement vines, 2%		90
Cover crop seed		19
Machine Costs: Repairs and maintenance		244
Fuel		463
Custom pruning - \$.50/vine		484
Custom tying - \$.28/vine		271
Tying material		58
Irrigation		287
Consulting fees		62
Interest on operating capital		1167
Land rental		
<b>Total Variable Costs</b>		<b>4567</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		359
Interest on investment		105
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>1005</b>
<b>Total Measurable "Second Year" Costs</b>		<b>5571</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Weed control: Hand hoeing	14.0	233			233
Summer training, tying, trunk est	15.0	250			250
<b>Total Hand Labour</b>	<b>29.0</b>	<b>483</b>			<b>483</b>
<b>Machine</b>					
Weed control: Grape hoeing (3x)	6.0	157	192	148	497
Spraying (2x)	1.4	37	38	21	96
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (8x)	2.6	68	107	110	285
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	0.0	0	0	0	0
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	2.0	52	59	37	148
<b>Total Machinery Operator</b>	<b>23.0</b>	<b>603</b>	<b>707</b>	<b>519</b>	<b>1828</b>

\*Includes maintenance, fuel and repair

## Third Year

2.4 tonne (25% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 13.0 hrs		216
Machine operator, 20.1 hrs		526
Fertilizer: Calcium ammonium nitrate, 50 kg		37
Muriate of potash, 60 kg		41
Insecticides		121
Fungicides		401
Herbicides		50
Replacement vines, 1%		45
Cover crop seed		19
Machine costs: Repairs and maintenance		245
Fuel		405
Custom pruning - \$.50/vine		484
Custom tying - \$.28/vine		271
Tying material		58
Irrigation		287
Custom harvest/delivery		235
Bird control		105
Board license and R&D fees (\$13.70 per tonne)		33
Crop insurance		26
Consulting fees (soil, leaf, spray)		62
Interest on operating capital		1406
Land rental		
<b>Total Variable Costs</b>		<b>5072</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		342
Interest on investment		104
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>986</b>
<b>Total Measurable "Third Year" Costs</b>		<b>6058</b>
<b>Contribution Margin</b>		
Gross Income (\$674 per tonne)		1601
Total Variable Costs		5072
<b>Contribution Margin (no land costs)</b>		<b>-3471</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	7.0	117			117
Shoot thin, positioning, tucking	4.0	67			67
Leaf removal	0.0	0			0
Bunch thinning	0.0	0			0
Other operations	2.0	33			33
Hand harvest	0.0	0			0
<b>Total Hand Labour</b>	<b>13.0</b>	<b>216</b>			<b>216</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	104	164	169	437
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	0.0	0	0	0	0
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	87	75	214
<b>Total Machinery Operator</b>	<b>20.1</b>	<b>526</b>	<b>649</b>	<b>497</b>	<b>1672</b>

\*Includes maintenance, fuel and repair

## Fourth Year

4.75 tonne (50% Yield)	Cost per acre (\$)	
Variable Costs	Actual	Budget
Labour: Hand, 13.0 hrs		216
Machine operator, 20.1 hrs		526
Fertilizer: Calcium ammonium nitrate, 74 kg		54
Muriate of potash, 70 kg		48
Insecticides		183
Fungicides		610
Herbicides		50
Replacement vines, 1%		45
Cover crop seed		19
Machine costs: Repairs and maintenance		245
Fuel		385
Custom pruning - \$.50/vine		484
Custom tying - \$.28/vine		271
Tying material		58
Irrigation		287
Bird control		105
Custom harvest/delivery		470
Board license and R&D fees (\$13.70 per tonne)		65
Crop insurance		52
Consulting fees (soil, leaf, spray)		62
Interest on operating capital		1606
Land rental		
<b>Total Variable Costs</b>		<b>5841</b>
<b>Fixed Costs</b>		
Machine costs: Depreciation		342
Interest on investment		104
Other overhead		540
Land ownership		
<b>Measurable Fixed Costs</b>		<b>986</b>
<b>Total Measurable "Fourth Year" Costs</b>		<b>6827</b>
<b>Contribution Margin</b>		
Gross Income (\$674) per tonne)		3202
Total Variable Costs		5841
<b>Contribution Margin (no land costs)</b>		<b>-2639</b>

## Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	7.0	117			117
Shoot thin, positioning, tucking	4.0	67			67
Leaf removal	0.0	0			0
Bunch thinning	0.0	0			0
Other operations	2.0	33			33
<b>Total Hand Labour</b>	<b>13.0</b>	<b>216</b>			<b>216</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	104	164	169	437
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.7	18	20	16	54
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	0.0	0	0	0	0
Vineyard maintenance	3.0	79	88	55	222
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.0	52	67	75	194
<b>Total Machinery Operator</b>	<b>20.1</b>	<b>526</b>	<b>629</b>	<b>497</b>	<b>1652</b>

\*Includes maintenance, fuel and repair

## Total Establishment Cost

	Actual	Budget
Preplant year		6881
Planting year		14534
Second year		5571
Third year		5777
Fourth year		6265
<b>Total</b>		<b>39028</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		2275 per year

(amortized over remaining 21 years of vineyard life)

## Mature Vineyard: Annual Costs

		Cost per acre (\$)	
	Your Farm	Yield	Yield
Variable Costs		7.5 Tonne	9.5 Tonne
Labour: Hand, 16.0 hrs		266	266
Machine operator 24.0 hrs		629	629
Fertilizer: Calcium ammonium nitrate, 99 kg		72	72
Muriate of potash, 80 kg		55	55
Insecticides		183	183
Fungicides		610	610
Herbicides		50	50
Replacement vines 1%		45	45
Cover crop seed		19	19
Wind machine		389	389
Machine costs: Repairs & maintenance		287	287
Fuel		483	483
Custom pruning \$.50/vine		484	484
Custom tying - \$.28/vine		271	271
Tying material		58	58
Irrigation		287	287
Bird control		105	105
Custom harvest/delivery		743	941
Board License and R&D Fees (\$13.70 per tonne)		103	130
Crop insurance		82	104
Consulting fees (soil, leaf, spray)		62	62
Interest on operating capital		261	274
Land rental			
<b>Total Variable Costs</b>		<b>5544</b>	<b>5804</b>
<b>Fixed Costs</b>			
Machine costs: Depreciation		396	396
Interest on investment		144	144
Other overhead		540	540
Land ownership			
<b>Measurable Fixed Costs</b>		<b>1080</b>	<b>1080</b>
<b>Total Measurable Cost</b>		<b>6624</b>	<b>6884</b>
<b>Contribution Margin</b>			
Gross Income (\$674 per tonne)		5055	6403
Total Variable Costs		5544	5804
<b>Contribution Margin (no land costs)</b>		<b>-489</b>	<b>599</b>

## Mature Vineyard: Annual Operation Costs

Operation	Labour (hours)	Labour Costs	Machine Costs*	Fixed Costs	Total Costs
<b>Hand</b>					
Suckering	7.0	117			117
Shoot thin, positioning, tucking	5.0	83			83
Leaf removal	0.0	0			0
Bunch thinning	0.0	0			0
Other operations	4.0	67			67
<b>Total Hand Labour</b>	<b>16.0</b>	<b>266</b>			<b>266</b>
<b>Machine</b>					
Weed control: Spraying (3x)	2.1	55	57	32	144
Discing, cultivating (3.5x)	2.8	73	80	57	210
Pesticide spraying (12x)	4.0	105	164	169	438
Fertilizing (2x)	1.0	26	27	17	70
Sow cover crop	0.6	16	17	13	46
Mowing (5x)	3.5	92	97	58	247
Hilling up and removal	0.0	0	0	0	0
Subsoiling/aerating	1.0	26	29	35	90
Vineyard maintenance	4.0	105	117	74	296
Replacing vines	1.0	26	29	18	74
Hedging (2.5x)	2.5	66	108	94	268
Leaf removal (0x)	0.0	0	0	0	0
Brush shredding/flail	1.5	39	45	33	117
<b>Total Machinery Operator</b>	<b>24.0</b>	<b>629</b>	<b>772</b>	<b>599</b>	<b>2000</b>

\*Includes maintenance, fuel and repair

## Table 7. Break Even and Profitability Worksheet

### 7.5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	6535	342	6877	-6877	-6877
Planting	0%	0	13634	899	14533	-14533	-21410
2	0%	0	4566	1005	5571	-5571	-26981
3	25%	1601	5072	986	6058	-4457	-31438
4	50%	3202	5841	986	6827	-3625	-35063
5	100%	5055	7071	1080	8152	-3097	-38160
6	100%	5055	7171	1080	8251	-3196	-41356
7	100%	5055	7276	1080	8356	-3301	-44657
8	100%	5055	7386	1080	8466	-3411	-48068
9	100%	5055	7501	1080	8581	-3526	-51595
10	100%	5055	7622	1080	8703	-3648	-55242
11	100%	5055	7749	1080	8830	-3775	-59017
12	100%	5055	7883	1080	8963	-3908	-62925

There is no breakeven at the 7.5 tonne/acre yield level (does not include land costs).

### 9.5 tonne/acre yield

Year	Yield %	Revenue	Variable Costs	Fixed Costs	Total Costs	Net Cash Flow	Accum. Profit
Pre-plant	0%	0	6535	342	6877	-6877	-6877
Planting	0%	0	13634	899	14533	-14533	-21410
2	0%	0	4566	1005	5571	-5571	-26981
3	25%	1601	5072	986	6058	-4457	-31438
4	50%	3202	5841	986	6827	-3625	-35063
5	100%	6403	7331	1080	8411	-2008	-37071
6	100%	6403	7377	1080	8457	-2054	-39125
7	100%	6403	7425	1080	8505	-2102	-41226
8	100%	6403	7475	1080	8555	-2152	-43379
9	100%	6403	7528	1080	8609	-2206	-45585
10	100%	6403	7584	1080	8664	-2261	-47846
11	100%	6403	7643	1080	8723	-2320	-50166
12	100%	6403	7704	1080	8784	-2381	-52547

There is no breakeven at the 9.5 tonne/acre yield level (does not include land costs).

**Table 8. Break Even Yield to Cover Variable Costs**

Yield MT/ac	Revenue	Variable costs excluding harvest and operating interest costs	Harvesting costs	Operating interest	Total Variable Costs	Contribution Margin
7.7	5,190	4,449	868	263	5,579	-389
7.8	5,257	4,449	879	263	5,591	-334
7.9	5,325	4,449	890	264	5,603	-278
8.0	5,392	4,449	902	264	5,615	-223
8.1	5,459	4,449	913	265	5,627	-167
8.2	5,527	4,449	924	265	5,638	-112
8.3	5,594	4,449	935	266	5,650	-56
<b>8.4</b>	<b>5,662</b>	<b>4,449</b>	<b>947</b>	<b>267</b>	<b>5,662</b>	<b>0</b>
8.5	5,729	4,449	958	267	5,674	55
8.6	5,796	4,449	969	268	5,686	111
8.7	5,864	4,449	980	268	5,698	166
8.8	5,931	4,449	992	269	5,709	222
8.9	5,999	4,449	1,003	269	5,721	277
9.0	6,066	4,449	1,014	270	5,733	333

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

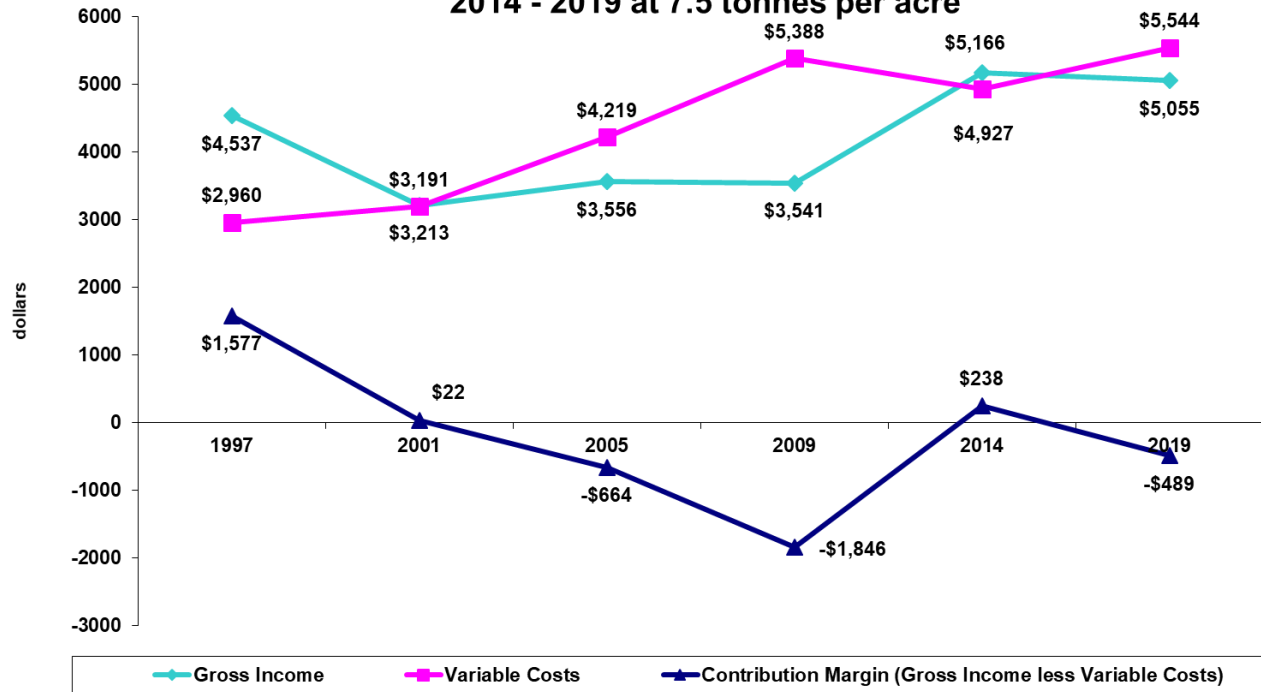
**Table 9. Break Even Yield to Cover Total Costs**

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
13.0	8762	5,529	1,465	292	2275	9561	-799
13.2	8897	5,529	1,488	293	2275	9585	-688
13.4	9032	5,529	1,510	294	2275	9609	-577
13.6	9166	5,529	1,533	296	2275	9632	-466
13.8	9301	5,529	1,555	297	2275	9656	-355
14.0	9436	5,529	1,578	298	2275	9680	-244
14.2	9571	5,529	1,600	299	2275	9703	-132
14.4	9706	5,529	1,623	300	2275	9727	-21
<b>14.6</b>	<b>9840</b>	<b>5,529</b>	<b>1,645</b>	<b>301</b>	<b>2275</b>	<b>9751</b>	<b>90</b>
14.8	9975	5,529	1,668	302	2275	9774	201
15.0	10110	5,529	1,691	303	2275	9798	312
15.2	10245	5,529	1,713	304	2275	9821	423
15.4	10380	5,529	1,736	306	2275	9845	534
15.6	10514	5,529	1,758	307	2275	9869	646

Breakeven yield to cover total annual costs is 14.6 tonnes / acre.

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

**Graph 5. Vidal Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997 - 2013 at 5.0 tonnes per acre and  
2014 - 2019 at 7.5 tonnes per acre



**Graph 6. Vidal Cost of Production**  
(Inflation adjusted = 2019 \$)  
1997 - 2013 at 7.0 tonnes per acre and  
2014 at 10.0 tonnes per acre and 2019 at 9.5 tonnes

