

The Economics Surrounding Premium Wine Production

by

Trent Ball

*Viticulture and Enology Program Chair, Yakima Valley Community College,
and Partner, Agri-Business Consultants LLC.*



Helpful Links

Wine and Concord Grape Economic Research

<http://www.agribusiness-mgmt.wsu.edu/AgbusResearch/ProjectsList.htm>

<http://www.nwgrapecalculators.org/>

- Washington Annual Grape Report

<http://www.nass.usda.gov/wa>



Presentation Format

- US and WA Wine Industry
- Economics of investing in and operating smaller premium wineries in the Pacific Northwest
- Pricing, product mix, and investment alternatives



Top Wine Producing Countries

<u>Country</u>	<u>% of World Production</u>
France	18.2%
Italy	17.6%
Spain	12.1%
USA	10.0%
Argentina	5.3%
Australia	4.9%



Top Wine Consuming Countries

<u>Country</u>	<u>% of World Consumption</u>
France	14.2%
Italy	11.7%
USA	10.8%
Spain	8.4%
Argentina	5.8%
China	5.0%



World Supply and Demand Situation

- World wine production in 2005
286,175,000 hl
- World wine consumption in 2005
239,877,000 hl
- Supply > Demand!



2007 USA Supply and Demand Conditions

- 6,729,700 tons of all types of grapes processed
- 5,901,000 tons or 88% were from California
- California crushed 3,200,000 tons of wine type grapes
- Wine sales in USA were 745 million gallons
 - Valued at \$30.0 billion



California Wine Grape Acreage

	2004	2005	2006	% change 2005-2006
Total	466,935	470,997	475,282	+0.91%
Bearing	440,296	445,141	448,003	+0.64%
Non- bearing	26,639	25,856	27,279	+5.50%

Table Wine Volume Sales by Color in U.S. Supermarkets

COLOR	1991	1995	2007
Red	17%	25%	43%
White	49%	41%	42%
Blush	34%	34%	15%
TOTAL	100%	100%	100%

Source: Based on U.S. supermarket data from ACNielsen.

Wine Sales in the U.S.- 1997 to 2007 in millions of gallons

Year	Table Wine	Dessert Wine	Champagne/ Sparkling Wine	Total Wine	Total Retail Value (billion)
2007 (Est.)	650	62	33	745	\$30.0
2006	624	57	35	716	\$27.8
2005	608	51	32	692	\$25.8
2004	589	45	31	665	\$24.0
2003	570	40	29	639	\$22.3
2002	552	37	28	617	\$21.8
2001	512	34	27	574	\$20.3
2000	507	33	28	568	\$19.2
1999	475	31	37	543	\$18.1
1998	466	31	29	526	\$17.0
1997	461	29	29	519	\$16.1

Estimated 2006 California Table Wine Shipments by Price Segment

Retail Price	Price Segment	Nine- liter Cases sold (Millions)	Percent of Total	Winery Sales Revenues (Millions)	Percent of Total
Over \$14	Ultra-premium	22	13%	\$2,930	35%
\$7 up to \$14	Super-premium	42	25%	\$2,640	32%
\$7 and Over	Subtotal Premium	64	38%	\$5,570	67%
\$3 up to \$7	Popular Premium	56.6	33%	\$1,830	22%
\$2 to \$3	Extreme Value Wines	6.9	4%	\$130	2%
Below \$3	Jug Wine	45.9	26%	\$730	9%
Up to \$7	Everyday Wine	109.4	62%	\$2,680	33%
	Total Table Wine	173.4	100%	\$8,250	100%

Wine Sales Volume and Revenue Relationships

- Premium table wines priced at \$7 or more per 750 ml account for:
 - 38% **volume** of wine sold
 - 67% of total revenues
- Fastest growing market segment in sales
- Most profitable



Number of Wineries

Bonded

U.S.

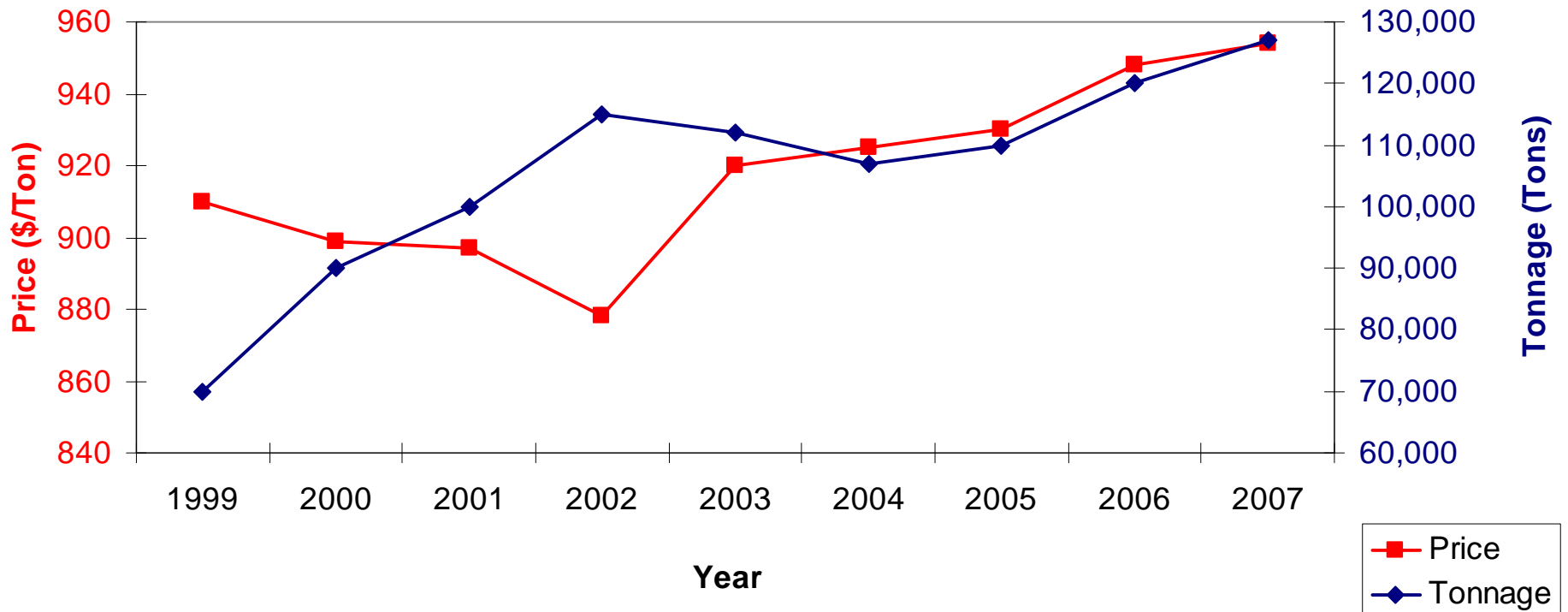
4,900

Washington

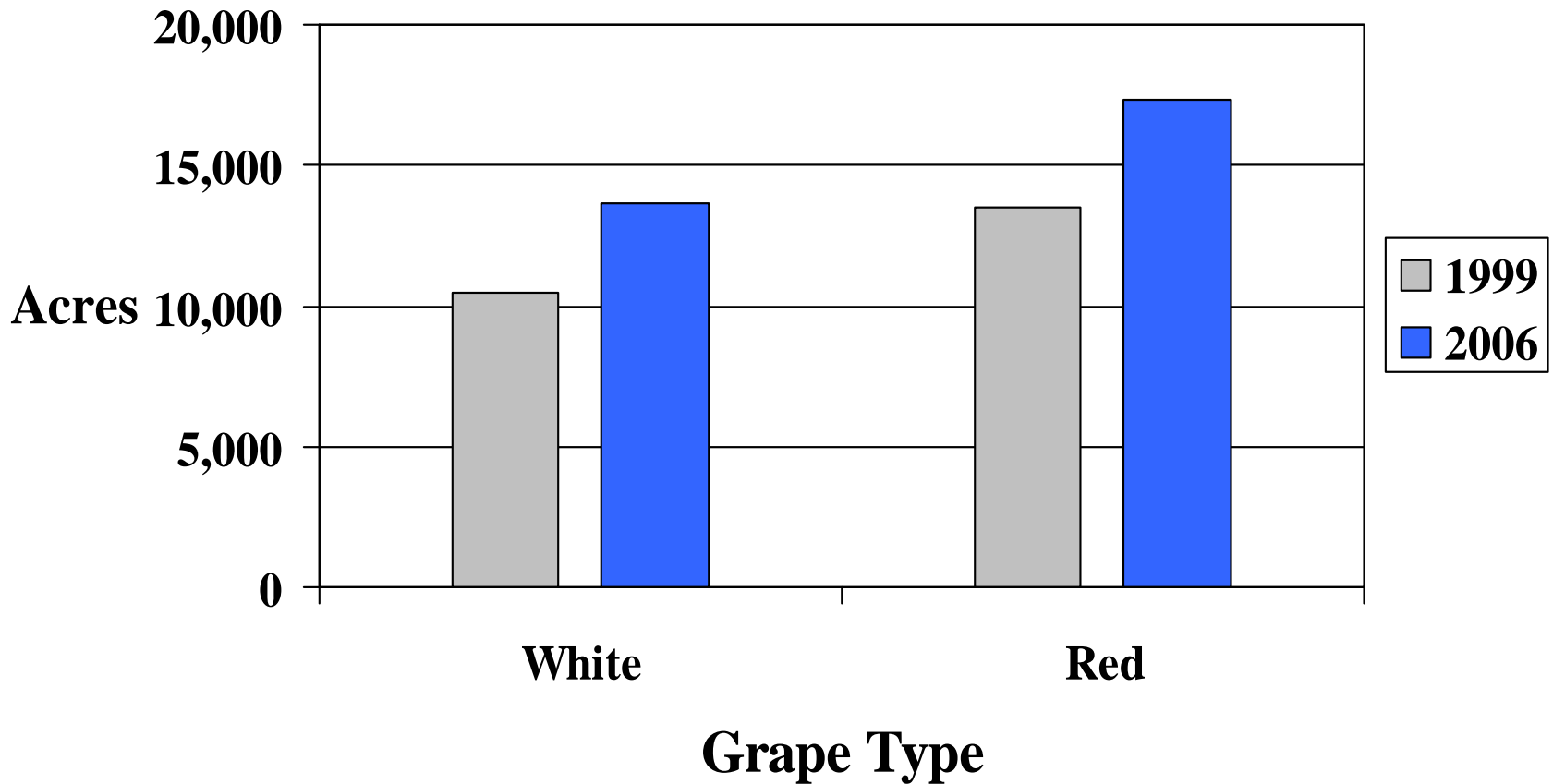
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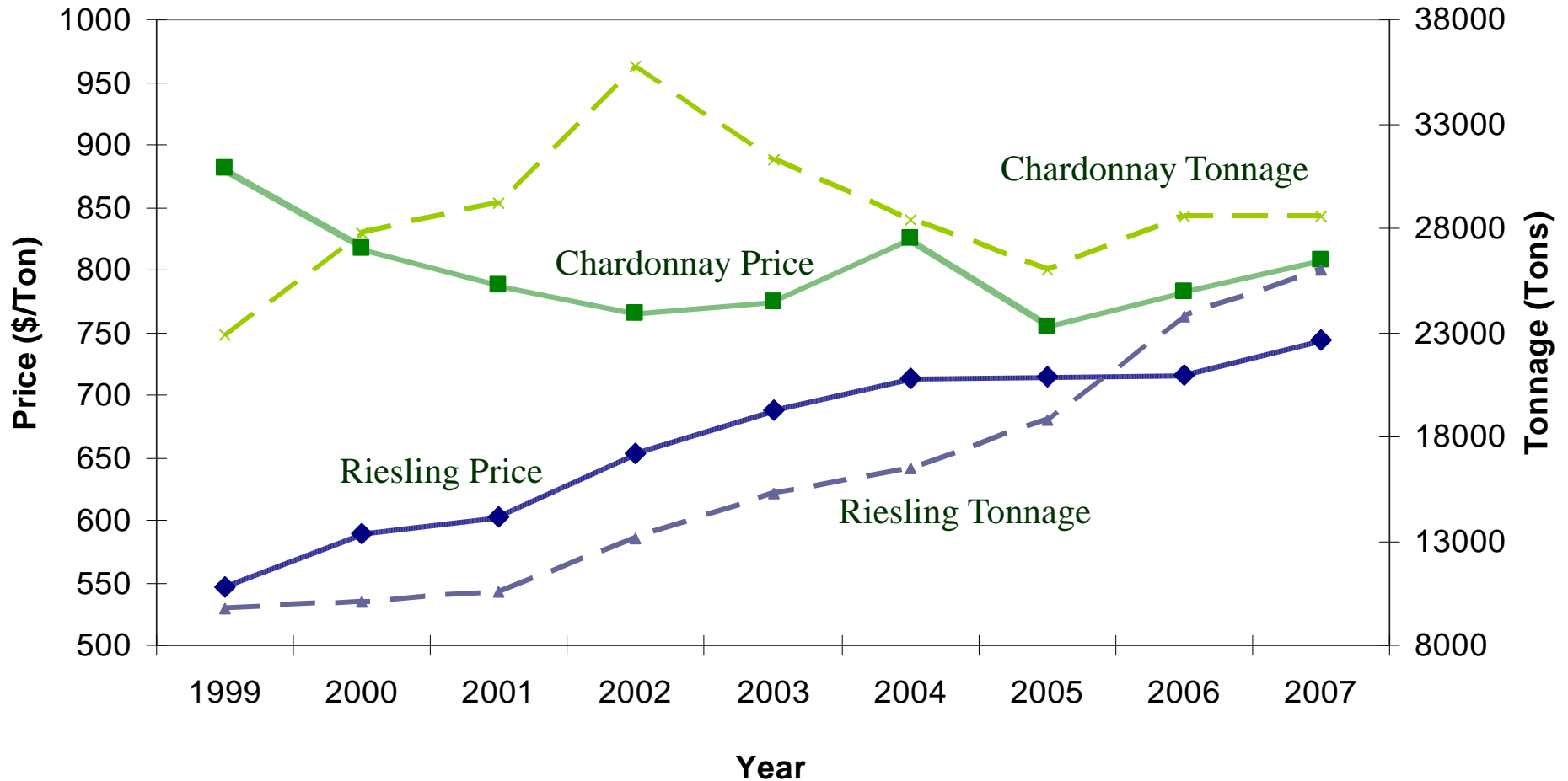
All Wine Grape Tonnage & Prices in Washington, 1999-2007



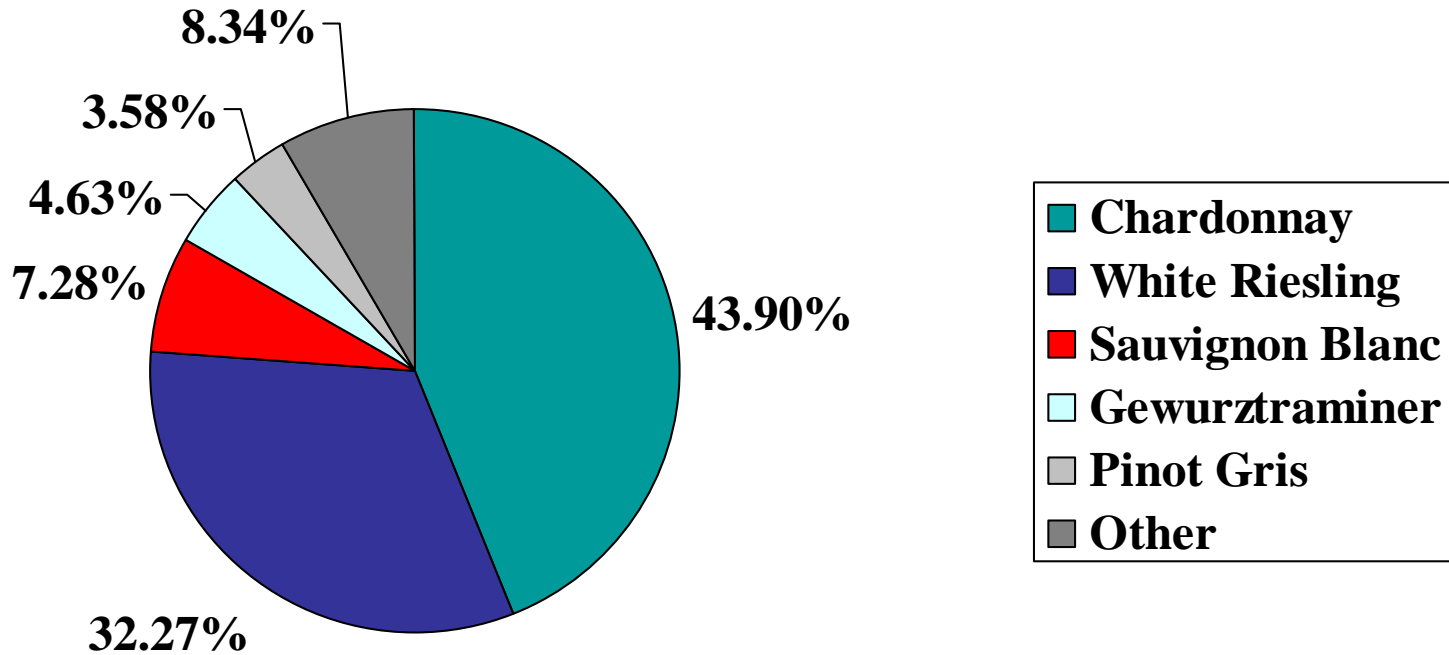
Red and White Wine Grape Acreage in Washington, 1999 and 2006



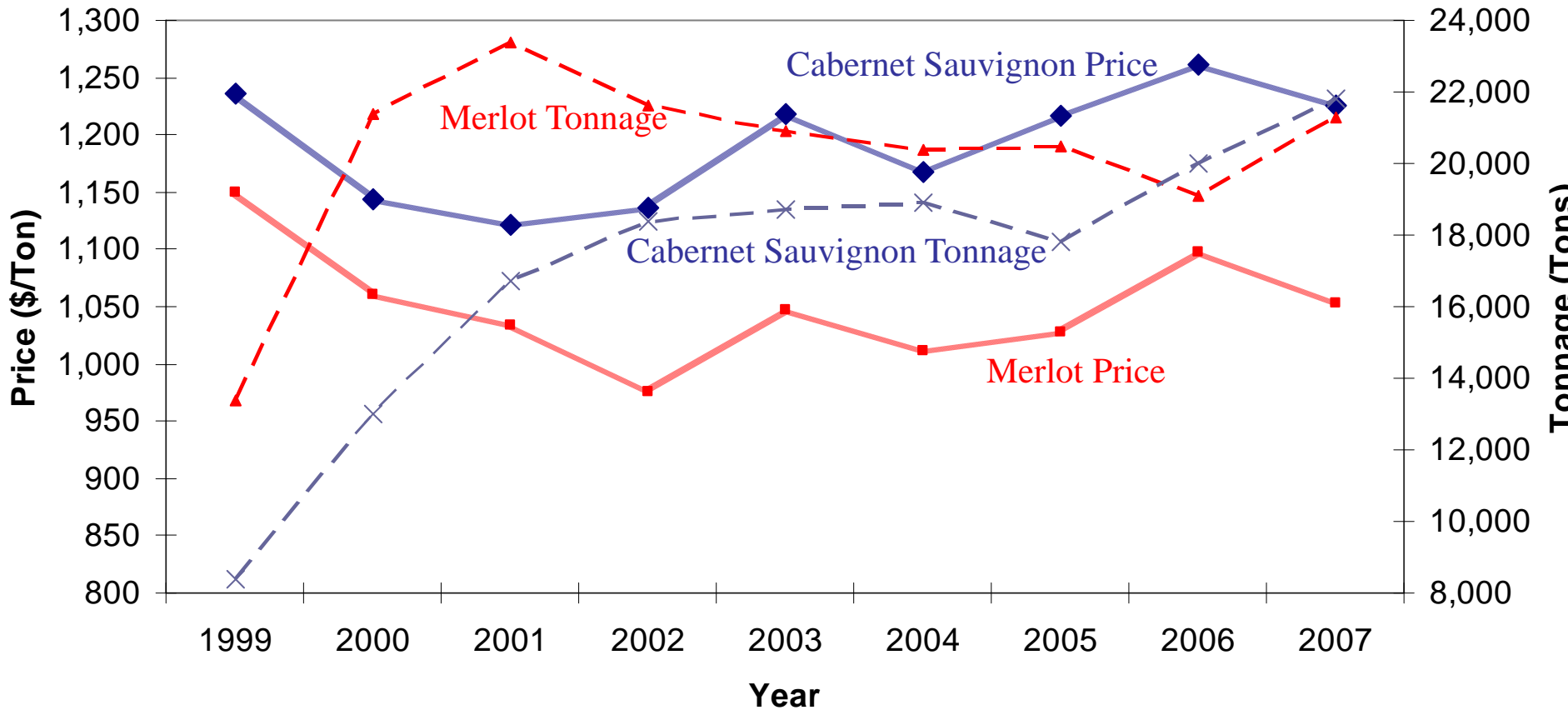
White Wine Grape Tonnages and Prices in Washington, 1999-2007



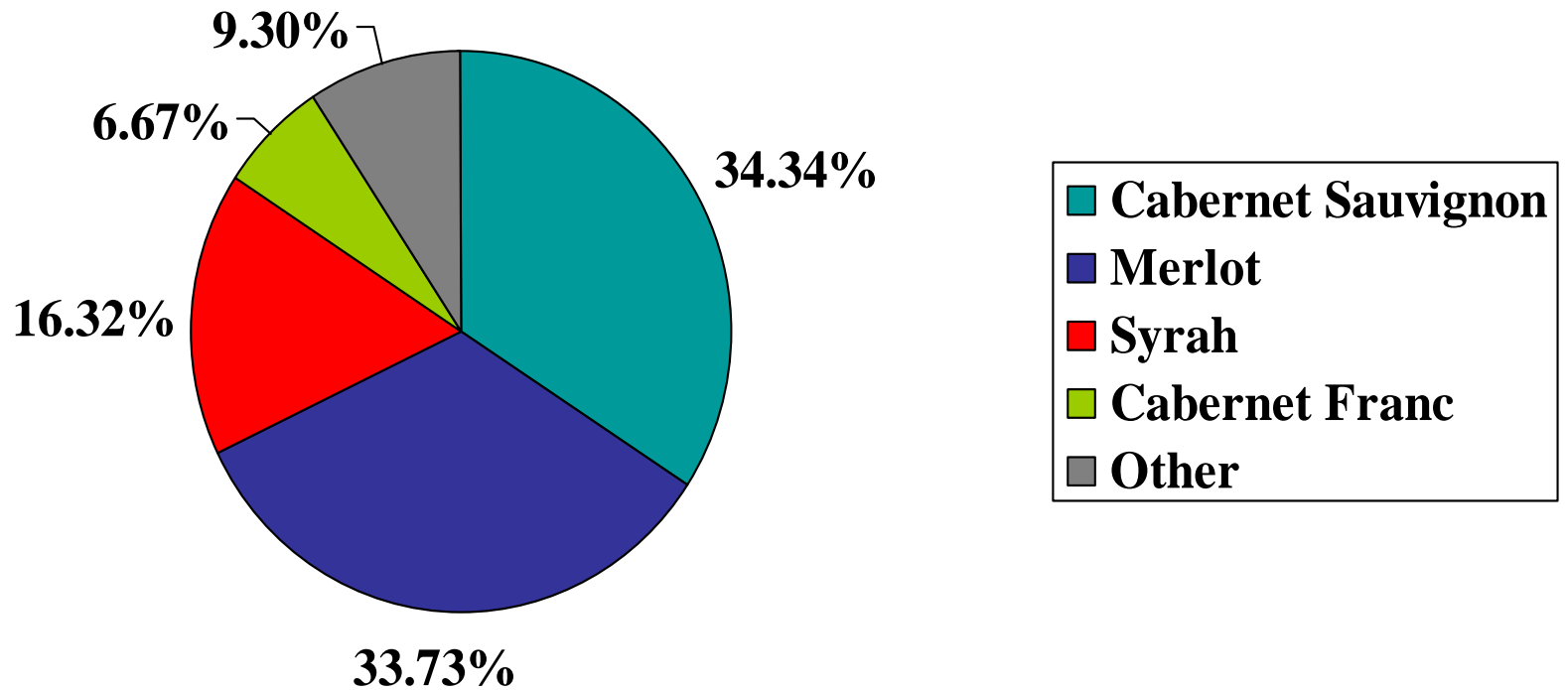
Percent Distribution of Major White Wine Grape Acreage in Washington, 2006



Red Wine Grape Tonnages and Prices in Washington, 1999-2007



Percent Distribution of Major Red Wine Grape Acreage in Washington, 2006



Other White Varieties (Acres)

Variety	Acres
Aligote	5
Madeleine Angevine	15
Madeleine Sylvaner	6
Muller-Thurgau	12
Pinot Blanc	11
Rousanne	53
Siegerrebe	18



Economics of Small Washington Wineries

- ❑ 2,000 to 10,000 cases of premium wines
- ❑ Economic-engineering approach
- ❑ Estimate the initial investment, operating costs, and financial returns

No Standard Winery

- ❑ Juice yield
- ❑ Quality of wine
- ❑ Temperatures and length of time of the fermentation process
- ❑ Length of aging process
- ❑ Use of oak cooperage
- ❑ Labor and capital intensity
- ❑ Bottling dates
- ❑ Marketing methods
- ❑ Access to grapes
- ❑ Etc.

Information Generated in the Analysis

- Identify the personnel and capital assets required to construct & operate 5 wineries of various sizes between 2K and 20K annual case production
- Calculate the total dollar investment required to construct each winery
- Estimate annual operating costs for each winery
- Calculate annual cash flow for each winery
- Calculate net present value (NPV), internal rate of return (IRR), equity payback, and debt recovery for each size winery

Wine Produced and Percent of Total Output by Winery Size (%)

	Winery Size (Cases)		
	2,000	5,000	10,000
Variety	----- Red -----		
Cabernet Sauvignon	35	35	30
Merlot	30	30	25
Syrah	10	10	20
Total Red	75	75	75
Variety	----- White -----		
Chardonnay	25	25	15
Riesling	--	--	10
Total White	25	25	25

Capital Assets- 2,000 Case Winery

Example

	Units	Cost	Ship/Install	Total
<u>Receiving Equipment</u>				
Picking Bins	30	\$300.00	\$15.00	\$9,450.00
Hopper	1	\$11,000.00	\$550.00	\$11,550.00
Stemmer/Crusher	1	\$7,995.00	\$399.75	\$8,394.75
Membrane Press	1	\$14,000.00	\$700.00	\$14,700.00
Must Pump	1	\$10,000.00	\$500.00	\$10,500.00
Must Lines	60	\$3.85	\$0.80	\$279.00
<i>Total</i>				<i>\$54,873.75</i>

2,000 Case Winery

	Units	Cost	Ship/Install	Total
<u>Cellar Equipment</u>				
Tank Mixer	1	\$850.00	\$42.50	\$892.50
Transfer Pump	1	\$4,995.00	\$249.75	\$5,244.75
Transfer Hose	180	\$2.03	\$0.50	\$455.40
Barrel Washer	1	\$1,000.00	\$50.00	\$1,050.00
Plate & Frame Filter	1	\$4,500.00	\$300.00	\$4,800.00
Air Compressor	1	\$269.00		\$269.00
Pressure Washer	1	\$500.00		\$500.00
Laboratory Equipment	misc	\$2,000.00		\$2,000.00
Misc. Supplies		\$1,411.60		\$1,411.60
Total				\$16,623.25

2,000 Case Winery

	Units	Prices	Ship/ Install	Total
<u>Materials Handling</u>				
Pallet Jack	1	\$240.00		\$240.00
Hand Cart	1	\$20.00		\$20.00
Fork Lift	1	\$22,500.00		\$22,500.00
Rotator Attachment	1	\$4,200.00		\$4,200.00
Pickup	1	\$22,560.00		\$22,560.00
				<hr/> <hr/>
<i>Total</i>				<i>\$49,520.00</i>
<u>Refrigeration</u>				
System	4	\$28,918.57		\$28,918.57
				<hr/> <hr/>
<i>Total</i>				<i>\$28,918.57</i>

2,000 Case Winery

	Units	Cost	Ship/Install	Total
<u>Fermentation/Storage</u>				
Fermentation Tanks	1	\$14,406.40	\$720.32	\$15,126.72
Storage Tanks	3	\$5,592.00	\$279.60	\$17,614.80
Bins	8	\$1,495.00	\$74.75	\$12,558.00
Tank Stands	4	\$145.00	\$7.25	\$609.00
Tank Washer	1	\$4,500.00	\$225.00	\$4,725.00
<i>Total</i>				<i>\$50,633.52</i>

2,000 Case Winery

	Units	Prices	Ship/Install	Total
<u>Cooperage</u>				
Barrels	80	\$560.00	\$20.00	\$46,400.00
Racks	80	\$60.00	\$3.00	\$5,040.00
Silicone Bungs	80	\$3.00	\$0.15	\$252.00
Fermentation Bungs	80	\$3.00	\$0.15	\$252.00
				<hr/> <hr/>
<i>Total</i>				<i>\$51,944.00</i>
<u>Tasting Room</u>				
Refrigerator	1	\$349.00		\$349.00
Wine Cooler	1	\$199.00		\$199.00
Commercial Dishwasher	1	\$5,000.00	\$250.00	\$5,250.00
Stemware	96	\$3.50		\$336.00
				<hr/> <hr/>
<i>Total</i>				<i>\$6,134.00</i>

Total Investment for 2,000 Case Winery

	Units	Cost	Ship/Install	Total
<u>Plant and Office</u>				
Computers	2	\$600.00		\$1,200.00
Office				\$4,788.00
Furnishings				\$11,970.00
Land	2	\$20,000.00		\$40,000.00
Building	3,000	\$159.60		\$478,800.00
Total				\$536,758.00

Total Investment Costs by Equipment Category and Winery Size (\$)

Cost Category	Winery Size (Cases)		
	2,000	5,000	10,000
Rec. Equip	\$54,873	\$91,320	\$106,932
Cellar Equip	\$16,623	\$16,828	\$17,068
Mat. Handling	\$49,520	\$49,520	\$49,520
Ref. System	\$28,919	\$47,978	\$80,677
Ferm & Storage	\$50,634	\$101,765	\$113,507
Cooperage	\$51,944	\$129,800	\$259,700
Tasting Room	\$6,134	\$6,302	\$6,470
Plant & Office	\$536,758	\$702,544	\$1,300,771
<u>Total Inv.</u>	\$795,405	\$1,146,057	\$1,934,645

Total Investment and Per Unit Costs by Winery Size (\$)

Winery Size (Cases)			
Cost Category	2,000	5,000	10,000
<u>Per Unit</u>			
\$/Case	\$397.70	\$229.21	\$193.46
\$/Gallon	\$167.10	\$96.31	\$81.29
\$/750 ml	\$33.14	\$19.10	\$16.12

Percent of Total Investment Costs by Equipment Category and Winery Size (%)

Cost Category	Winery Size (Cases)		
	2,000	5,000	10,000
Receiving Equipment	6.90	7.97	5.53
Cellar Equipment	2.09	1.47	0.88
Material Handling	6.23	4.32	2.56
Refrigeration System	3.64	4.19	4.17
Fermentation & Storage	6.37	8.88	5.87
Cooperage	6.53	11.33	13.42
Tasting Room	0.77	0.55	0.33
Plant & Office	67.48	61.30	67.24

Summary of Winery Labor Requirements and Annual Costs by Position (\$)

	2,000	5,000	10,000
Full Time	Cases	Cases	Cases
<u>Position</u>			
General Manager		34,000	49,500
Winemaker	32,000	39,600	42,500
Cellerman		22,080	27,600
Office Manager			24,900
TOTAL FT LABOR	32,000	95,680	144,500

Summary of Winery Labor Requirements and Annual Costs by Position (\$)

	2,000	5,000	10,000
Part Time	Cases	Cases	Cases
<u>Position</u>			
Clerical	9,360	9,360	
Customer Service		9,360	18,720
TOTAL PT LABOR	9,360	18,720	18,720
TOTAL LABOR	41,360	114,400	163,220

Variable (Operating) Costs by Winery Size

Variable Cost	2,000 Case	5,000 Case	10,000 Case
Grapes	\$33,822.39	\$84,555.97	\$168,024.75
Cooperage	\$37,015.09	\$92,537.73	\$185,075.47
Packaging	\$42,885.56	\$107,213.91	\$215,615.15
Mobile Bottling	\$8,055.30	\$19,512.82	\$38,688.80
Taxes and Dues	\$11,820.05	\$27,772.98	\$86,321.26
Full Time Labor	\$32,384.00	\$99,146.00	\$149,855.00
Part Time Labor	\$9,360.00	\$18,720.00	\$18,720.00
Marketing	\$9,104.36	\$14,794.59	\$25,138.67
Utilities	\$2,700.00	\$5,550.00	\$8,800.00
Office Supplies	\$740.00	\$1,750.00	\$3,300.00
Other	\$2,060.00	\$4,450.00	\$8,900.00
Total Avg. VC	\$189,946.76	\$476,004.01	\$908,439.09

Fixed Costs by Winery Size (\$)

Fixed Cost	2,000 Cases	5,000 Cases	10,000 Case
Insurance	\$2,300.00	\$5,000.00	\$8,200.00
Maintenance	\$1,000.00	\$2,650.00	\$4,700.00
Property Tax	\$7,094.66	\$15,187.41	\$25,823.67
Depreciation	\$70,090.04	\$139,258.77	\$250,885.49
Interest	\$26,572.76	\$37,102.92	\$65,243.05
Cost of Equity	\$30,673.56	\$41,535.81	\$72,268.91
Total Fixed Costs	\$137,731.03	\$240,734.90	\$427,121.12

Total, Variable, and Fixed Costs by Winery Size (\$)

Cost Category	2,000 Cases	5,000 Cases	10,000 Cases
Total Variable Costs	\$189,946.76	\$476,004.01	\$908,439.09
Total Fixed Costs	\$137,731.03	\$240,734.90	\$427,121.12
TOTAL COSTS	\$327,677.79	\$716,738.91	\$1,335,560.21

Average Variable Costs Per Case

Variable Cost	2,000 Case	5,000 Case	10,000 Case
Grapes	\$16.91	\$16.91	\$16.80
Cooperage	\$18.51	\$18.51	\$18.51
Packaging	\$21.44	\$21.44	\$21.56
Mobile Bottling	\$4.03	\$3.90	\$3.87
Taxes and Dues	\$5.91	\$5.55	\$8.63
Full Time Labor	\$16.19	\$19.83	\$14.99
Part Time Labor	\$4.68	\$3.74	\$1.87
Marketing	\$4.55	\$2.96	\$2.51
Utilities	\$1.35	\$1.11	\$0.88
Office Supplies	\$0.37	\$0.35	\$0.33
Other	\$1.03	\$0.89	\$0.89
Total Avg. VC	\$94.97	\$95.20	\$90.84

Average Fixed Costs Per Case (\$)

Fixed Cost	2,000 Cases	5,000 Cases	10,000 Cases
Insurance	\$1.15	\$1.00	\$0.82
Maintenance	\$0.50	\$0.53	\$0.47
Property Tax	\$3.55	\$3.04	\$2.58
Depreciation	\$35.05	\$27.85	\$25.09
Interest	\$13.29	\$7.42	\$6.52
Cost of Equity	\$15.34	\$8.31	\$7.23
Total Average Fixed Costs	\$68.87	\$48.15	\$42.71

Average Total, Average Variable, and Average Fixed Operating Costs per Case by Winery Size (\$)

	2,000 Cases	5,000 Cases	10,000 Cases
Total Avg.			
Variable Cost	\$94.97	\$95.20	\$90.84
Total Avg.			
Fixed Cost	\$68.87	\$48.15	\$42.71
Avg. Total Cost	\$163.84	\$143.35	\$133.56

Assumptions Made in Calculating Cash Flows

- Project planning horizon is 10 years
- All five wineries are regular corporations subject to regulations outlined in '06 IRS publication 542
- Tasting room sales accounted for a % of premium cases sold

	Winery Size (Cases)		
	2,000	5,000	10,000
Tasting Room	75%	65%	55%
Wholesale	25%	35%	45%

Assumptions Made in Calculating Cash Flows

- A 2% inflation rate was used
- Any and all additional injection of capital beyond initial outlays at time 0 are 100% equity financed
- In the first year, Riesling was sold, in second year Merlot and Chardonnay, and in the third year all varieties were sold
- Wine pricing
 - \$15/bottle or \$180/case retail
 - \$10/bottle or \$120/case wholesale

Cash Flow Statement

- Total Revenue
 - \$/case x number of cases sold
 - Dependent upon wholesale or tasting room
- Expenses
 - Operating and Fixed Costs
- Earnings Before Taxes (EBT)

Cash Flow Statement

Earnings Before Taxes
+ Carryover Loss
Taxable Income

Taxable Income
- Income Tax
Gross Cash Flow

Gross Cash Flow
+ Depreciation
- Principal Payments
Net Cash Flow

Tax Rate Schedule: Taxable Income

Greater Than-	Less Than-	Tax is:		Of the amount over-
\$0	50,000		15%	-0-
50,000	75,000	\$7,500 +	25%	\$50,000
75,000	100,000	13,750 +	34%	75,000
100,000	335,000	22,250 +	39%	100,000
335,000	10 Million	113,900 +	34%	335,000

Loan Amount (Principal and Interest) by Loan Type and Winery Size (\$)

Winery	Real Estate Loan	Equipment Loan
2,000 Case	\$389,100.00	\$235,114.33
5,000 Case	\$508,800.00	\$397,508.10
10,000 Case	\$942,750.00	\$575,998.30

Financial Analysis to Determine Acceptability of Investment

- Net Present Value (NPV)
 - 11.3% discount rate
- Internal Rate of Return (IRR)
- Equity payback period
- Debt recovery period

Cash Flow Projections

Year	2,000 Cases	5,000 Cases	10,000 Cases
1	(\$185,272.89)	(\$382,402.61)	(\$507,342.15)
2	(\$78,855.28)	(\$127,729.91)	(\$205,139.25)
3	\$28,889.15	\$131,662.57	\$350,747.18
4	\$44,183.88	\$168,835.73	\$382,161.53
5	\$47,338.99	\$175,747.18	\$394,976.38
6	\$108,602.35	\$280,886.73	\$495,921.35
7	\$111,407.94	\$284,537.43	\$455,411.42
8	\$114,269.64	\$241,116.48	\$453,189.95
9	\$115,392.04	\$235,971.18	\$451,078.72
10	\$102,951.89	\$240,814.74	\$460,726.40

Net Present Value (NPV), Internal Rate of Return (IRR), Equity Payback Period, and Debt Recovery Period by Winery Size

Winery (Cases)	NPV (\$)	IRR	Equity Payback (yrs)	Debt Recovery (yrs)
2,000	(\$96,348.20)	6.64%	6.29	6.73
5,000	\$165,052.09	15.65%	3.93	4.90
10,000	\$671,370.76	22.29%	3.26	4.46

Assumption Land Increases to \$30,000

Winery	NPV (\$)	IRR (%)	Equity Payback (yrs)	Debt Recovery (yrs)
2,000 Case	(\$109,044.52)	6.08%	6.53	6.88
5,000 Case	\$152,601.25	15.30%	3.99	4.96
10,000 Case	\$654,154.86	21.94%	3.29	4.51

Product Price and Input Price Changes

- What has a greater impact on returns and NPV
 - Product price change
 - Grape input price change

NPV by Winery Size for a 20% Product Price Increase or Grape Input Price

Decrease

Winery Size (Cases)

Scenario

2,000

5,000

10,000

Product Price

Increase (20%)

\$230,893

\$887,813

\$1,969,594

Grape Price

Decrease (20%)

(\$44,936)

\$282,908

\$874,366

Product Versus Grape Price

□ Impact on returns

- Product price has greater effect than grape input price
- Bottom line can be dramatically influenced with control of product price

Incubator Scenario

- Assume start-up winery will use an existing facility
- No real estate loan
 - Monthly lease payment
- Keep existing capital loan
 - No equipment provided

Cash Flow Projections- Incubator

Year	2,000 Cases	5,000 Cases
1	(\$175,104.54)	(\$369,743.19)
2	(\$69,190.92)	(\$115,742.49)
3	\$38,039.42	\$142,964.55
4	\$52,809.80	\$179,438.56
5	\$55,430.05	\$185,636.88
6	\$116,092.82	\$289,966.47
7	\$118,341.96	\$282,581.19
8	\$120,636.07	\$247,299.15
9	\$112,314.97	\$242,199.24
10	\$108,213.56	\$247,112.31

Incubator Scenario

Winery (Cases)	NPV (\$)	IRR	Equity Payback (yrs)	Debt Recovery (yrs)
2,000	\$85,658.93	17.18%	3.15	3.74
5,000	\$397,850.92	24.96%	2.52	3.13

Scenario Comparisons

	2,000 Case Winery		5,000 Case Winery	
Evaluation	Build Facility	Incubator	Build Facility	Incubator
NPV	(\$96,348)	\$85,659	\$165,052	\$397,850
IRR	6.64%	17.18%	15.65%	24.96%

Summary and Conclusions

- Plant and office followed by cooperage were the largest investment costs
- Economies of size exist with the wineries
- The 10,000 case winery had highest IRR and shortest payback periods
- Cooperage has significant impact on operation costs and quality
- Product sales price control has more impact on returns than grape input price

