

Cost of Establishment and Production of *Cold Hardy Grapes* in the Thousand Islands and Chautauqua-Lake Erie Region, 2015

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Before We Begin

- This is an Economic Cost Analysis
 - We take into consideration implicit costs as well as explicit costs
 - Common to break even in these analyses
- This is a Benchmark Study
 - Assumption of prime sites for wine production
 - Adoption of recommended production and management practices



Outline of Presentation

- 2015 Cost study of four *Cold Hardy* grapes:
Brianna, La Crescent, Frontenac, Marquette
- Assumptions: Land prices, Land size, Vineyard arrangement,
Grape Yield and Prices, Capital Requirement, Interest rate, etc.
- Establishment & Development Costs, Growing costs
- Comparison of two regions
Thousand Islands vs. Chautauqua-Lake Erie
- What is next?
Interactive online tool



Acknowledgements

Growers Panel

Thousand Islands	Chautauqua-Lake Erie
<ul style="list-style-type: none">• Sue Maring• Phil Randazzo• David Fralick	<ul style="list-style-type: none">• Kurt Hutchinson• Raymond Krupa• Dennis Rak• Mark Martin• Rick Walker

Colleagues

- Kevin Martin, Associate Extension Educator at Penn State Extension and Business Management at Lake Erie Regional Grape Program
- Tim Martinson, Head of the New York State Viticulture Extension Program and faculty at Cornell University



A Regional Map



Source: www.newyorkwines.org



Regions and Varieties

Thousand Islands	Chautauqua-Lake Erie
<ul style="list-style-type: none">• Relatively young history<ul style="list-style-type: none">–First cold hardy in 2002• Relatively small scale business• 10 vineyards today	<ul style="list-style-type: none">• Long history with focus on ConCORDs• Lake Erie Wine Country<ul style="list-style-type: none">- 50 miles- 30,000 acres- 24 wineries• Wide varieties

Cold Hardy Grapes

- Thrive in cold climates, bear temperatures as low as -30°F
- Viticulturally-speaking outstanding
- First studied in University of Minnesota
- Young history
- Top four varieties: Marquette, La Crescent, Frontenac, and Brianna



Brianna, Frontenac – Thousand Islands



High Cordon – Thousand Islands



Assumptions

Common

- Tile Drainage, High Cordon Trellis system
- Property tax, Insurance, Interest rate on capital, Management fee

Notable Differences

	Thousand Islands	Lake Erie
Land size	20/22 acres (<u>22 acres total</u>)	13/15 acres (<u>200 acres total</u>)
Wage rates	\$11.5/hr and \$17/hr	\$12/hr and \$15/hr for
Avg. grape price	\$1,575/ton	\$675/ton
Avg. grape yield	2.48 tons/acre	4.75 tons/acre



Assumptions - continued

		Brianna	Frontenac	La Crescent	Marquette
Prices (\$/ton)	Thousand Islands	\$1,500	\$1,500	\$1,500	\$1,800
	Chautauqua	\$600	\$600	\$600	\$900
Yields (tons/acre)	Thousand Islands	2.44	2.25	2.20	3.02
	Chautauqua	5.0	5.0	4.0	5.0



Site Preparation & First Year (per acre), Erie Region

	(Unit: Acre)	Labor Used	Labor Hours	Equipment Hours	Labor Cost	Equipment Cost	Materials Cost	Total Cost
Site Preparation								
Drainage		Custom						\$3,904
Lime		Custom						\$130
Herbicide application		Skilled	0.1	0.1	\$2	\$2	\$17	\$20
Soil Sampling		Skilled	0.2		\$3		\$4	\$7
Fall fertilization		Skilled	0.6	0.5	\$9	\$7	\$87	\$103
Plowing		Skilled						\$50
Discing		Skilled						\$50
Pickup truck (10,000 miles for 13 ac/year)		N/A				\$75		\$75
Total for site preparation			0.9	0.6	\$14	\$9	\$108	\$4,339
First Year								
Planting		Skilled	10	10	\$150	\$121	\$1,974	\$2,245
Fertilization (banded)		Skilled	0.6	0.5	\$9	\$7	\$7	\$22
Chem. weed control –trellis, spot		Skilled	1	1	\$15	\$17	\$27	\$58
Trellis construction (see table 6 for details)		Skilled	20	13	\$300	\$205	\$1,809	\$2,314
Cultivation (2X)		Skilled	1.2	1.2	\$18	\$17		\$35
Seed cover crop		Skilled	0.6	0.5	\$10	\$7	\$11	\$27
Pickup truck (10,000 miles for 13 ac/year)		N/A				\$75		\$75
Total for first year			33.7	26.2	\$501	\$448	\$3,828	\$4,776
Total for first year and site prep								\$9,115



Summary of Est & Dev Cost for Years 1-3 (per acre), Erie Region

Item	Year 1	Year 2	Year 3
Revenue			
Yield per acre (tons)	0	0	1
Market price (avg. of 4 varieties)	na	na	\$675
Total revenue	\$0	\$0	\$675
Costs			
Site preparation	\$4,339	\$0	\$0
Annual variable costs			
-Preharvest	\$4,776	\$567	\$982
-Harvest (hand)+hauling	\$0	\$0	\$200
<i>Total Variable Costs & Site preparation</i>	\$9,115	\$567	\$1,182
Annual fixed costs			
-Machines & equipment amortization	\$115	\$115	\$115
-Buildings amortization	\$185	\$185	\$185
-Property taxes	\$50	\$50	\$50
-Land opportunity cost	\$40	\$40	\$40
-Office Supplies, phone, etc.	\$10	\$10	\$10
-Insurance (fire, liability)	\$15	\$15	\$15
-Management	\$0	\$0	\$0
<i>Total Fixed Costs</i>	\$454	\$454	\$454
Interest on cumulative costs (real interest rate= 2%)	\$191	\$216	\$253
Total costs	\$9,760	\$1,237	\$1,889
Net returns	(\$9,760)	(\$1,237)	(\$1,214)
Total cumulative costs	\$9,760	\$10,997	\$12,211
Amortization of vineyard:			\$692
Cash costs of vineyard establishment (3 Yrs.)			\$10,665



Summary of Growing Cost for Years 4 and Beyond (per acre), Erie Region

Item	Year 1	Year 2	Year 3	Year 4+
Site preparation	\$4,339	-	-	-
Vines & planting	\$2,245	-	-	-
Trellis materials & construction	\$2,314	-	-	\$73
Replanting & Rouging	-	-	\$50	\$50
Dormant pruning & removal	-	\$60	\$150	\$187
Weed control	\$120	\$194	\$132	\$113
Fertilization	\$22	\$0	\$56	\$119
Canopy management	-	\$98	\$233	\$228
Disease & insect control	-	\$68	\$112	\$144
Mowing	-	\$73	\$97	\$108
Bird Control	-	-	\$77	\$56
Pick-up	\$75	\$75	\$75	\$75
Crop Insurance*	-	-	-	\$109
Total Growing Costs	\$9,115	\$567	\$982	\$1,261



Costs and Returns for a Mature Vineyard of *Cold Hardy Grapes 2015 (\$/acre), Thousand Islands Region*

	Brianna	Frontenac	La Crescent	Marquette
Total Receipts	\$3,660	\$3,375	\$3,300	\$5,436
Variable Costs*	\$2,081	\$2,057	\$2,051	\$2,154
Fixed Costs	\$2,724	\$2,710	\$2,706	\$2,813
Profit or Loss	-\$1,145	-\$1,392	-\$1,457	\$469



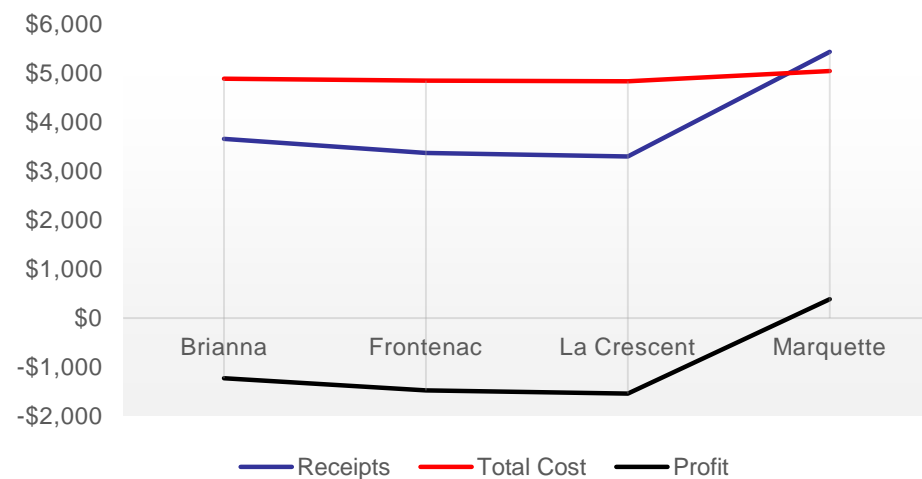
Costs and Returns for a Mature Vineyard of *Cold Hardy Grapes 2015* (\$/acre), Lake Erie Region

	Brianna	Frontenac	La Crescent	Marquette
Total Receipts	\$3,000	\$3,000	\$2,400	\$4,500
Variable Costs*	\$1,506	\$1,506	\$1,460	\$1,506
Fixed Costs	\$1,295	\$1,295	\$1,265	\$1,370
Profit or Loss	\$198	\$198	-\$325	\$1,623

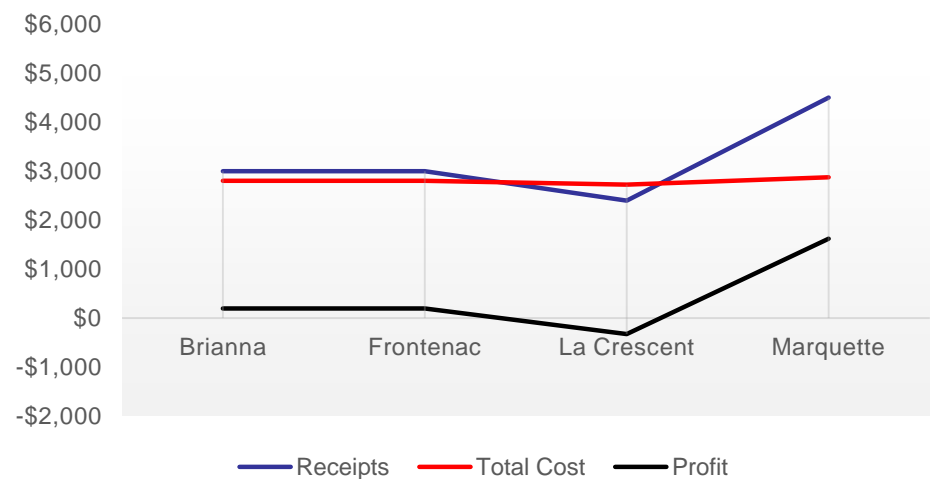


Comparison in Graph

Thousand Islands region



Chautauqua-Lake Erie region



Breakeven Analysis for a Mature Vineyard, *Cold Hard Grapes*, 2015 (\$/acre, tons/acre)

- **Thousand Islands**

	Brianna	Frontenac	La Crescent	Marquette
Breakeven Price	\$1,969	\$2,119	\$2,162	\$1,645
Breakeven Yield	3.3	3.3	3.3	2.8

- **Chautauqua-Lake Erie**

	Brianna	Frontenac	La Crescent	Marquette
Breakeven Price	\$560	\$560	\$681	\$575
Breakeven Yield	4.6	4.6	4.6	3.1



Investment Comparison, 2015 (\$ per Planted Acre)

	Thousand Islands	Chautauqua
Land	\$2,200 (6.6%)*	\$2,308 (11.6%)
Mach & Equip	\$9,968 (29.7%)	\$1,222 (6.1%)
Buildings	\$3,375 (10.1%)	\$4,154 (20.9%)
Vineyard Est. & Development	\$17,987 (53.6%)	\$12,211 (61.4%)
Total Investment	\$33,530	\$19,895

*Percentage of total investment



Why the Difference?

- Different assumptions
 - Prices (lower grape prices in the Erie region)
 - Yields (higher grape yield in the Erie region)
 - Labor costs (lower labor costs in the Erie region)
- Different Est. & Development, Growing Costs:
 - No sprays during years 0,1 and lots of changes in the spray program (with lower costs) in the Erie region
 - Different bird control methods
 - Different treatments: No vine replacement, no hoe around the vines, and no Rogueing in the Erie region
 - Summary: Different Management skills
- Most importantly, how we treated the fixed costs:
 - Much lower costs in the Erie region due to larger total land size



Takeaway

- Economies of Scale matter
 - Small-scale vineyard management is not a \$\$\$ making business
 - Common to break even
 - Consider participation in different channels (ex. Wine production & distribution)
- Cold Hardy Grape Production is relatively a New Trend
 - The prospect for demand is yet unknown for sure
 - Volatile prices leads to different financial analysis
 - Importance of sensitivity analysis, break-even analysis



Next: Interactive Web-based Tool

New York State Grape Cost Projection

Fill out the fields below with your own estimated expenses and click on the Submit button below of starting a vineyard.

Vineyard Layout

Ranch Acres(Including 4 acres of supporting land)	54	acres
Planted acres	50	acres
What is the Width of the vineyard	4950	ft
What is the length of the vineyard	440	ft

Expense Assumptions

Skilled labor (including fringe benefits) <small>hint</small>	20	\$/hr
Unskilled labor (including fringe benefits) <small>hint</small>	13.50	\$/hr
Gasoline	3.83	\$/gallon
Diesel (Green diesel- for ag.)	3.9	\$/gallon

Harvest Expenses

For year fourth and beyond, what is the estimated cost per ton of machine harvesting and hauling?	95
What is the estimated cost of hand custom harvesting & hauling for year 3?	275

Overhead Assumptions

If you invested in machinery and buildings, did you insured these items? Yes No

Revenue Assumptions

<https://agfinance.dyson.cornell.edu/AgRiskManagement/UserInputPage>





Thank You!

Questions or Comments?

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For the whole report, please visit:

<http://publications.dyson.cornell.edu/outreach/extensionpdf/2015/Cornell-Dyson-eb1512.pdf>

