



2014 Maple Business Benchmark

FBRR015—07/16 Mark Cannella, Farm Business Management Specialist



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Introduction

The maple industry in Vermont continues to grow. Maple producers experienced record crop yields matched with sustained strong prices in the 2013 sugaring season. Moving into the 2014 sugaring season producers were aware of slight price declines in the forecast. While producers were still hopeful for a strong sugaring season many managers were concerned that too large of a crop might overwhelm the overall syrup supply and accelerate the price drops (it was not until later in 2014 that producers learn that market price declines would be primarily driven by the Canadian/US currency exchange rates). Low cost producers continued to add taps. Other producers seeing the eminent price declines decided to postpone expansions until they had more certainty in the maple syrup market prices.

The 2014 Maple Business Benchmark is the second year of financial record analysis for the Vermont maple industry. The University of Vermont Extension worked with 18 maple producers to complete financial analysis of their maple enterprise. Participants each received a detailed financial summary of their business that included information on sales, expenses, investments and profitability. That same information has been combined to create the 2014 Maple Benchmark report. The participants represent a small sample of the entire Vermont maple industry. This report will show a wide range of figures due to the small group size and diversity of operations participating in 2014.

Terms and Definitions

Accrual Adjusted Production Income: Sales, plus inventory adjustments, plus accounts payable/receivable adjustments at the end of the year. Inventory valuations were based on expected sale prices given the product form (package size) at the end of the year. Inventory of bulk syrup intended for re-packing to retail was valued at bulk prices. Retail packaged inventory was valued at conservative retail prices.

Cost of Production (COP): Calculated by adding annual variable costs, fixed costs, accrued expenses, depreciation and value of unpaid labor. Certain fixed expenses, capital assets and depreciation have been pro-rated to reflect the allocation of this expense to the “maple enterprise” versus other business activities. Depreciation cost is obtained by dividing the purchase price of capital assets by an average life span. No consideration is given to depreciation taken for tax purposes or estimated salvage values in this report.

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The “cost of production” section of this report includes 3 different cost of production calculations. All cost of production calculations exclude any payments made towards real estate ownership. The “full economic cost of production” includes both owner draws and any residual unpaid owner labor and management. Unpaid labor is valued at \$18.00 per hour.

- COP from Operations: Includes variable costs, fixed costs (excluding loans), capital expenses and owner compensation.
- COP with Depreciation: Includes COP from Operations and depreciation. It does not include owner draws or unpaid labor/management.
- Full Economic COP: Includes COP with Depreciation, owner draws and the value of unpaid labor/management.

Bulk Producers: These producers sell 90% or more of their gross sales to bulk buyers.

Intermediate Assets: Equipment, machinery and improvements that have a useful life of more than one year. Long term real estate assets were not included in this analysis.

Investment (Asset @ Cost): Investment refers to the cash value for the purchase of intermediate assets in use by the business. Participants reported the cash cost at the time of purchase.

Long Term Assets: Long term assets include buildings and improvements with a lifespan greater than 20 years. Real estate values were not included in this project (nor was cash payments or debt service related to real estate).

Median: The mid-point of a range of data with an equal number of data points below and above the median.

Net Farm Income: Accrual adjusted income, less operating expenses, less depreciation, less actual owner draws and all residual unpaid labor or management. Principal and interest on real estate payments are not included. Principal and interest on real estate payments are not included.

Production-Based Income: Annual sales, plus or minus accrual income adjustments.

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Sales: Cash receipts received from January 1st – December 31st. For certain indicators “production based income” replaces sales.

Top Profit Group: This is the group of producers that demonstrated a Return on Assets that is equal to or above the group average. Return on Assets is calculated as “net farm income ÷ intermediate assets”.

Unpaid Owner Labor: Owners estimated the number of hours contributed to essential operating activities for the following categories: sugar bush, sugarhouse time, packing/canning, sales, marketing, distribution and office time. Each hour was valued at an average rate of \$18 per hour.

Variable and Fixed Costs: These are the costs (variable and fixed) associated with annual operation of the business. Operating expenses includes interest payment associated with debt service. Operating expenses do not include the following “capital activity” items: principal portion of debt payments (cash expenses), capital expenses (cash expenses) or depreciation (non-cash).

Wholesale/Retail: Producers that sell less than 90% of total sales to bulk buyers. Other sales channels include a mix of business to business and direct sales to customers.

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Participant Overview

Eighteen producers completed financial analysis for the 2014 calendar year. One participant record was omitted from the group analysis due to data inconsistencies. The following lists describe key features of the business owners and their operations. The number of total respondents for each topic varies based on the number of completed management questionnaires.

a) Tap Number

- 2,600 - 4,999 taps : 8 producers
- 5,000 - 8,499 taps : 4 producers
- 8,500 - 14,999 taps : 3 producers
- 15,000 taps and over : 3 producers

b) Reverse Osmosis

- 17 out of 18 participants used reverse osmosis (RO) technology. Three participants have used RO technology for more than 20 years.

c) Fuel

- 10 producers use oil.
- 8 producers use wood, wood chips or wood pellets.

d) Pipeline Systems

- 17 producers use high-vacuum tubing systems. Observed average vacuum over the entire season ranges from 18" Hg to 26" Hg.

e) Market Channels

- 10 producers are categorized as "Bulk" (90% or more of sales from Bulk Sales).
- 8 producers are categorized as "Retail/Wholesale" mix.

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Land Use

Table 1: Financial measures per acre

	Range		Average	Median
	Low	High		
Accrual Adjusted Income Per Acre	\$181	\$1,941	\$948	\$1,024
Net Farm Income Per Acre	(\$331) ¹	\$627	\$29	(\$57)
Taps Per Acre	21	112	59	55
Gallons Syrup Per Acre	4	47	25	25

Productivity

Table 2: Productivity per tap

	Range		Average	Median
	Low	High		
Taps (#)	2,650	+ 50,000 ²	11,353	7,200
Gallons Per Tap³	0.21	0.54	0.38	0.39
Pounds Per Tap	2.4	6.0	4.3	4.4

The USDA National Agricultural Statistics Service report the average yield for Vermont in 2014 is 0.31 gallons of syrup per tap.

¹ () indicates a negative number.

² Exact tap numbers not displayed to maintain producer privacy.

³ The conversion factor of 11.15 lbs. = 1 gallon syrup was used when actual records were not available.

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Table 3: Investment per tap (cost basis valuation, see definitions)

	Range		Average	Median
	Low	High		
Asset @ Cost Per Tap	\$17.34	\$73.65	\$44.64	\$44.95

Table 4: Investment per tap for tap size groups (not including real estate)

Taps	Range		Average	Median
	Low	High		
2,600-4,999	\$ 31.51	\$ 73.65	\$ 53.84	\$ 60.01
5,000 – 8,499	\$ 23.19	\$ 72.05	\$ 43.73	\$ 39.84
8,500 – 14,999	\$ 27.70	\$ 52.75	\$ 36.45	\$ 28.89
15,000 +	\$ 17.34	\$ 47.13	\$ 32.56	\$ 33.22

Table 5: Investment levels above-average and below-average yield

	Average Investment Value
Above Average Yield Producers	\$50.32 Per Tap
Below Average Yield Producers	\$38.25 Per Tap

The average yield for the entire group is 0.38 gallons per tap or 4.26 pounds per tap.

Expenses

There are a number of participating producers that purchase sap or syrup. When these purchases are significant, the variable costs per tap will appear higher than the actual costs to maintain their own taps. The high end range for variable costs is driven by operations that purchased significant amounts of finished syrup for resale. Producers that only produce syrup from their own woods will expect to incur lower costs.

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Table 6: Key expenses per gallon for all producers

	Range		Average	Median
	Low	High		
Fuel (Evaporator Only)⁴	\$ 0	\$ 3.27	\$ 1.06	\$ 1.16
Labor (Paid)	\$ 0	\$ 13.79	\$ 2.66	\$ 1.55
Unpaid Labor⁵	\$ 0	\$ 45.98	\$ 8.30	\$ 6.26
Electric	\$ 0	\$ 2.28	\$ 1.01	\$ 1.03
Supplies	\$ 0.23	\$ 8.14	\$ 2.69	\$ 1.93
Variable Cost Total	\$ 3.69	\$ 39.84	\$ 16.13	\$ 11.32
Fixed Cost Total	\$ 1.43	\$ 21.86	\$ 7.12	\$ 5.61
Depreciation	\$ 3.87	\$ 14.51	\$ 7.11	\$ 7.04

Table 7: Key expenses per tap for all producers

	Range		Average	Median
	Low	High		
Fuel (Evaporator Only)	\$ 0	\$ 1.73	\$ 0.51	\$ 0.50
Labor (Paid)	\$ 0	\$ 5.32	\$ 1.13	\$ 0.71
Unpaid Labor	\$ 0	\$ 11.81	\$ 2.89	\$ 2.67
Electric	\$ 0	\$ 0.93	\$ 0.41	\$ 0.41
Supplies	\$ 0.09	\$ 2.47	\$ 0.96	\$ 0.77
Variable Cost Total	\$ 1.78	\$ 15.77	\$ 6.44	\$ 4.32
Fixed Cost Total	\$ 0.70	\$ 7.55	\$ 2.71	\$ 2.19
Depreciation	\$ 1.50	\$ 5.06	\$ 2.89	\$ 2.76

⁴ Operators using harvested cordwood or chips report no cash expense for fuel, these operations have increased labor or equipment related expenses related to firewood production.

⁵ Unpaid labor is a valuation of owner labor hours. It does not include owner draws. For full cost of production that includes owner draw see the Full Economic Cost of Production in Table 12

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Table 8: Key expenses expressed as a percent of production based income

	Range		Average	Median
	Low	High		
Fuel (Evaporator Only)	0%	9%	3%	3%
Labor (Paid)	0%	43%	7%	4%
Unpaid Labor	0%	61%	19%	17%
Electric	0%	6%	3%	2%
Supplies	1%	19%	6%	5%
Variable Cost Total	16%	73%	38%	30%
Fixed Cost Total	4%	61%	18%	13%
Depreciation	5%	36%	20%	19%

Table 9: Key expenses per pound for bulk producers

	Range		Average	Median
	Low	High		
Fuel (Evaporator Only)	\$ 0	\$ 0.21	\$ 0.08	\$ 0.09
Labor (Paid)	\$ 0	\$ 1.24	\$ 0.23	\$ 0.08
Unpaid Labor	\$ 0	\$ 1.58	\$ 0.52	\$ 0.55
Electric	\$ 0.04	\$ 0.20	\$ 0.10	\$ 0.09
Supplies	\$ 0.02	\$ 0.70	\$ 0.19	\$ 0.12
Variable Cost Total	\$ 0.33	\$ 2.16	\$ 1.10	\$ 0.81
Fixed Cost Total	\$ 0.21	\$ 1.75	\$ 0.60	\$ 0.38
Depreciation	\$ 0.35	\$ 1.30	\$ 0.65	\$ 0.68

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Cost of Production, Ratios and Comparisons

Table 10: Operating cost of production (see “Terms and Definitions”)

	Range		Average	Median
	Low	High		
COP (Operations) Per Tap	\$ 3.07	\$ 19.27	\$ 9.15	\$ 6.95
COP (Operations) Per Gallon	\$ 6.35	\$ 61.71	\$ 23.25	\$ 20.00
COP (Operations) Per Pound	\$ 0.57	\$ 5.53	\$ 2.09	\$ 1.79

Table 11: Cost of production with depreciation

	Range		Average	Median
	Low	High		
COP with Depreciation Per Tap	\$ 7.06	\$ 22.40	\$ 12.04	\$ 10.40
COP with Depreciation Per Gallon	\$ 14.62	\$ 67.62	\$ 30.36	\$ 28.24
COP with Depreciation Per Pound	\$ 1.31	\$ 6.06	\$ 2.72	\$ 2.53

Table 12: Full economic cost of production

	Range		Average	Median
	Low	High		
Full Economic Cost of Production (COP) Per Tap	\$ 9.30	\$ 24.95	\$ 15.71	\$ 14.50
Full Economic Cost of Production (COP) Per Gallon	\$ 17.19	\$ 92.40	\$ 40.75	\$ 35.59
Full Economic Cost of Production (COP) Per Pound	\$ 1.54	\$ 8.29	\$ 3.65	\$ 3.19

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Table 13: Ratios for all producers combined

	Range		Average	Median
	Low	High		
Production Based Income ÷ Investment	16%	153%	46%	37%
Net Farm Income ⁶ ÷ Investment	-16%	49%	6%	1%
Net Returns to Real Estate ⁷ ÷ Investment	-16%	49%	3%	-3%
Unpaid Labor ÷ Production Based Income	0%	61%	19%	17%
Depreciation ÷ Production Based Income	5%	36%	20%	19%

Table 14: Net farm income divided by investment for tap size groups (NFI ÷ Investment)

Taps	Range		Average	Median
	Low	High		
2,600 - 4,999	-16%	10%	-4%	-4%
5,000 - 8,499	-7%	49%	17%	13%
8,500 - 14,999	-9%	26%	8%	5%
15,000 +	1%	30%	12%	5%

Table 15: Full economic cost of production per pound for tap size groups

Taps	Range		Average	Median
	Low	High		
2,600 - 4,999	\$ 2.10	\$ 8.29	\$ 4.07	\$ 2.99
5,000 - 8,499	\$ 1.81	\$ 7.09	\$ 4.09	\$ 3.38
8,500 - 14,999	\$ 2.67	\$ 4.10	\$ 3.44	\$ 3.56
15,000 +	\$ 1.54	\$ 3.33	\$ 2.32	\$ 2.09

Top Performers

The following tables show the financial performance for producers that achieved above average profits for this study group. The average profit level for the entire group was Return on Intermediate Assets (ROA) of 3%. The top profit producers demonstrated ROA greater than 3%.

⁶ Net Farm Income includes all operating costs, depreciation and actual owner draws (does not include the value of unpaid labor and management).

⁷ Net Returns to Real Estate includes all operating costs, depreciation and full economic cost of unpaid labor and management.

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Table 16: Average full economic cost of production for the top profit producers and the full group for various tap size enterprises

Taps	Top Profit Group		Full Group Average	
	Per Pound	Per Gallon	Per Pound	Per Gallon
2,600 - 4,999	n/a	n/a	\$ 4.35	\$ 48.51
5,000 - 8,499	\$ 3.67	\$ 40.88	\$ 3.59	\$ 40.07
8,500 - 14,999	\$ 3.11	\$ 34.73	\$ 3.44	\$ 38.41
15,000 +	\$ 1.82	\$ 20.25	\$ 2.32	\$ 25.89

Table 17: Average full economic cost of production per tap for the top profit producers and entire group by tap size groups

Taps	Top Profit Group	Full Group Average
2,600 - 4,999	n/a	\$ 18.28
5,000 - 8,499	\$ 15.40	\$ 14.48
8,500 - 14,999	\$ 16.64	\$ 15.33
15,000 +	\$ 17.19	\$ 11.75

Table 17 demonstrates that the most profitable businesses are not necessarily the lowest cost producers. Producer data reinforces that the top profit group includes both higher cost producers that market syrup at higher prices and low cost producers selling bulk syrup at the standard market price. The top profit group is a mix of cost and sales managers.

Market Channel

Table 18: Full economic cost of production and marketing channel

Market Channel	Range		Average	Median
	Low	High		
Bulk	\$ 1.54 per lb.	\$ 5.00 per lb.	\$ 2.94 per lb.	\$ 2.70 per lb.
	\$ 17.17 per gal.	\$ 55.75 per gal.	\$32.78 per gal.	\$30.11 per gal.
Retail/Wholesale	\$ 1.81 per lb.	\$ 8.29 per lb.	\$ 4.67 per lb.	\$ 3.56 per lb.
	\$ 20.16 per gal.	\$ 92.40 per gal.	\$ 52.06 per gal.	\$ 39.65 per gal.

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Top Performance Strategies

Profitability was measured using a Return on Assets (ROA) calculation (see Table 13). Average ROA using Net Farm Income was 6%. Average ROA using Net Returns to Real Estate (after full owner labor and management charges) was 3%. A subset of the participating producers demonstrated above average profitability. Each producer had a different management system or marketing strategies. Key features of these top performers include high income, low depreciation and marketing strategies aligned with cost of production.

High Income in Relation to Investments

The top performers achieved high production-based income per tap by combining above average yield per tap and/or securing strong prices for their crop in relation to the dollars invested. Strong production alone or strong prices coming from direct markets alone is not an indicator of strong financial profitability.

Through this project the financial metric “Production based Income ÷ Investment” has been highlighted to combine productivity per tap (in the woods) with average sales revenue for the amount of syrup coming from that tap. The metric highlights the interplay between yield, revenue generation and the level of investment to maintain the business.

Example A: Slightly below average yields, modern investment costs and bulk markets

Yield Per Tap	3.3 lbs.
Average Income Per Pound	\$ 2.50
Investment Per Tap	\$ 45
Production Based Income ÷ Investment	18 %

Example B: High yield, higher modern investment costs and mixed markets

Yield Per Tap	5.5 lbs.
Average Income Per Pound	\$ 2.65
Investment Per Tap	\$ 58
Production Based Income ÷ Investment	25%

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Low Depreciation

The top performers all have lower depreciation per tap, roughly \$2.00 per tap or lower. They have kept depreciation at 15% of production based income or lower while average depreciation across the entire group is roughly 20% of production based income. Some top performers are large tap size operations that benefit from an economies of scale to reduce depreciation. Other top performers keep older resources (like sugarhouses) in service for longer than expected.

A Variety of Marketing Plans

Top performers each market syrup in different ways. The group includes bulk-only sellers, value added enterprises, producers selling both bulk barrels and producers selling retail containers online.

Managing Forward

Surveys and interviews with participants identified a number of key business topics guiding their decision making in the next 1-3 years.

Larger tap enterprises will self-market more syrup

As businesses expand past 20,000 taps the owners recognize that the margin they give up by selling to bulk markets continues to increase. In some cases, this lost margin may add up to an amount that is large enough to hire their own focused marketing staff. This differs from smaller scale owner-operator enterprises that absorb the cost of direct marketing into the owners increased workload. Larger maple enterprise are evaluating the option to market syrup through expansion of hired employees.

Insurance

There is concern that significant weather events (wind, ice) may cause damage to the sugar bush and tubing system. Producers wish to purchase insurance on tubing systems when possible. Producers are also concerned about the multi-year income disruption if trees are pushed out of production due to storm damage. Heavily invested maple businesses are seeking strategies to mediate this risk.

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Price Decline

Producers in the United States are keenly aware that they benefit from price stabilization provided through the activities of the Federation of Quebec Maple Syrup. Producers also realized that bulk prices hovering near \$3.00 per pound were not likely to last forever. During the data collection for this report (in 2015) producers were already witnessing price declines. Previously, most producers were concerned that overproduction in strong maple years might create an oversupply. Instead, the US maple industry faced the impact of a stronger US dollar as domestic price declined in response to the US/Canadian currency exchange rate. Producers feel they can tolerate a short term situation of prices slightly under \$2.50 per pound but they are uncomfortable with the prospect of sustained prices near the forecasted levels of \$2.00 - \$2.10 per pound.

The presence of debt payments on borrowed money or a requirement for owner draws on commercial enterprises will create pressure on cash flow. This pressure may be a new experience for managers who have benefited from strong prices over the past several years.

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