2017 Maple Business Benchmark

FBRR029 - 6/19
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Photo Credit: Mark Isselhardt

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Acknowledgements

Special thanks to the maple syrup and sap producers who have shared their financial records and expertise to support this project. By opening their private records to this project they are supporting hundreds of new and existing producers each year.

This report is dedicated to Brian Stowe for his lasting contributions to the University of Vermont and the maple community.

Contents

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Introduction

The 2017 season followed the record-breaking crop of 2016. As the 2017 season approached, business owners remained apprehensive about bulk market prices. Rumors of strong crop inventories paired with softening prices continued to concern producers. The US tap count continues to grow, but at a slightly slower rate than previous years. The most current maple statistics are available from the United States Department of Agriculture National Agricultural Statistics Service (USDA NASS)[1].

The 2017 Maple Business Benchmark is the fifth year of financial record analysis for a small group of commercial syrup producers. Participants each received a detailed financial summary of their business that included information on sales, expenses, investments and profitability. This report shows a wide range of figures due to the small group size and diversity of operations participating in 2017. The subgroup of participants with over 15,000 taps in this report is very small with only one usable business record.

The 2017 study group is a small sample of the entire Vermont maple industry. The methods for this project and our reported observations, however, can compel maple business managers to think about their particular business situations. Maple managers can use the cost analysis methods presented here to analyze their own business and then assess the changes in their individual performance from year to year.

Terms and Definitions

Cost of Production (COP): Calculated by adding annual variable operating 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.

The "cost of production" section of this report includes three 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 $22.00 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.

[1] USDA NASS New England
https://www.nass.usda.gov/Statistics_by_State/New_England_includes/Publications/Current_News_Release/2018/Maple%20Syrup%202018.pdf

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 a 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. In some instances a Fair Market Value estimate was used to value assets and/or calculate depreciation when cost basis records were not available.

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 Returns to Real Estate: Accrual adjusted income, less operating expenses, less depreciation, less value of owner unpaid labor. Principal and interest on real estate payments are not included.

Production-Based 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 and/or discounted.

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 $22 per hour.

Variable and Fixed Costs: These are the costs associated with annual operation of the business. These operating expenses include interest payment associated with debt service but not the principal portion. The following "capital activity" items are not included in our variable or fixed cost categories: principal portion of debt payments (cash expenses), capital expenses (cash expenses), depreciation (non-cash) and value of unpaid labor (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.

Participant Overview

Sixteen producers completed financial analysis for the 2017 calendar year and group analysis was complete with twelve usable business records. Financial sets got dropped from the group analysis for the following reasons: complications due to large purchase and resale of syrup and inaccuracies within business records. The section below describes 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.

Tap Number

- 2,600 - 4,999 taps: 3 producers
- 5,000 - 8,499 taps: 4 producers
- 8,500 - 14,999 taps: 4 producers
- 15,000 taps and over: 1 producers

Fuel

- 5 producers use oil.
- 7 producers use wood, wood chips or wood pellets.

Market Channels

- 9 producers are categorized as “Bulk” (90% or more of sales from Bulk Sales).
- 3 producers are categorized as “Retail/Wholesale” mix.
- This group benchmark includes certified organic producers and standard bulk producers.

Land Use

Table 1: Financial Measures Per Acre

	Range			
	Low	High	Average	Median
Taps Per Acre	21	87	55	53
Gallons Syrup Per Acre	7	40	24	25
Pounds of Syrup Per Acre	79	446	272	277
Production Based Income Per Acre	$215	$1,062	$692	$ 691
Net Returns Per Acre	- ($223)	$415	$50	$ 21

Productivity

Table 2: Productivity Per Tap

	Range			
	Low	High	Average	Median
Taps (#)	2,600	17,000	7,838	7,300
Gallons Per Tap	0.23	0.60	0.42	0.42
Pounds Per Tap[2]	2.5	6.7	4.7	4.7

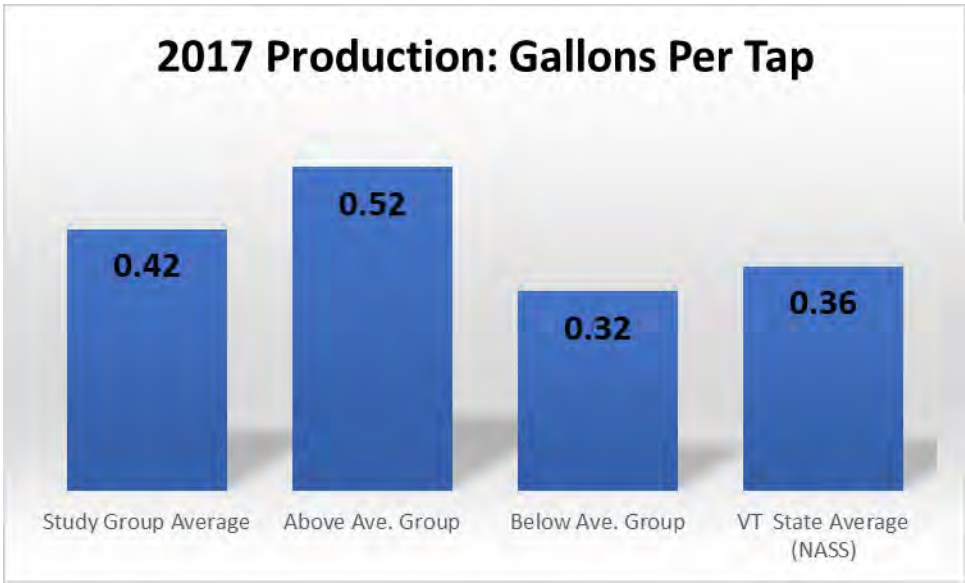
Table 3: Productivity Per Tap for Four Years

	Averages			
	2014	2015	2016	2017
Gallons Per Tap	0.38	0.40	0.51	0.42
Pounds Per Tap[3]	4.3	4.4	5.6	4.7

[2] The conversion factor of 11.138 lbs. = 1 gallon syrup was used when actual records were not available.
[3] The conversion factor of 11.138 lbs. = 1 gallon syrup was used when actual records were not available.

The USDA National Agricultural Statistics Service reported the average yield for Vermont in 2017 is 0.36 gallons of syrup per tap[4] (4.1 pounds per tap).

Figure 1: Production Yields in 2017



Investments

Table 4: Investment Per Tap (cost basis valuation, see definitions)

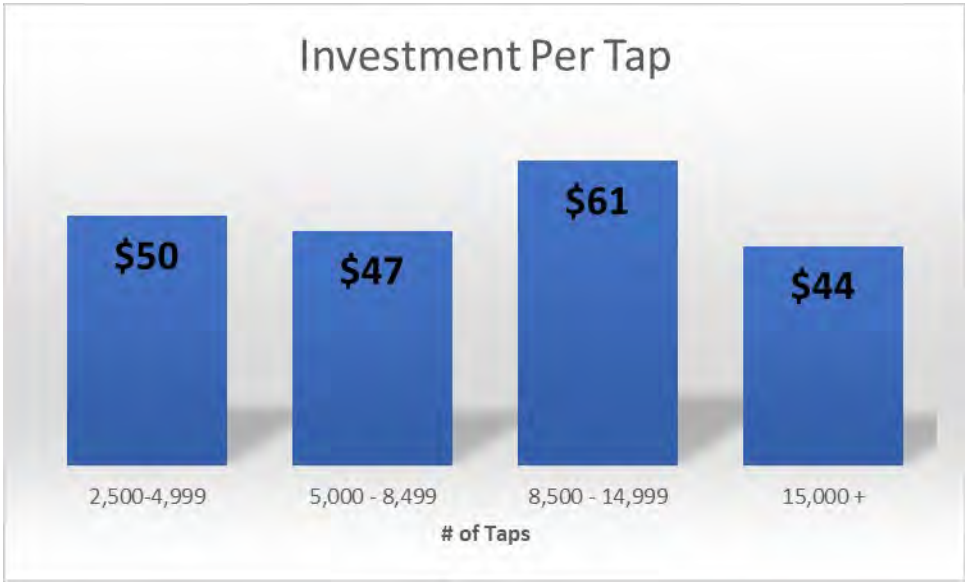
	Range			
	Low	**High**	**Average**	**Median**
Asset @ Cost Per Tap	$ 27	$ 82	$ 52	$ 56

Table 5: Investment Per Tap for Tap Size Groups

	Range			
Taps	**Low**	**High**	**Average**	**Median**
2,600 – 4,999	$ 31	$ 63	$ 50	$ 57
5,000 – 8,499	$ 28	$ 69	$ 47	$ 45
8,500 – 14,999	$ 35	$ 82	$ 61	$ 63
15,000 +	$ 44	$ 44	$ 44	$44

[4] Northeast Maple Syrup Production, available online at: https://www.nass.usda.gov/Statistics_by_State/New_England_includes/Publications/Current_News_Release/2018/Maple%20Syrup%202018.pdf

Figure 2: Investment Level at Different Scales



The average yield for the entire group is 0.42 gallons per tap or 4.7 pounds per tap in 2017. The "Above Average" group in Table 6 include all participants with over 0.42 gallons per tap. In 2017 there is an observed difference of investment level with above average yield producers making a larger investment.

Table 6: Investment Levels Based on Yield

	Average Investment Value
Above Average Yield Producers	$ 54 Per Tap
Below Average Yield Producers	$ 43 Per Tap

Expenses

Table 7 – Table 11 report a summary of key expenses but the full list of expense categories used for Cost of Production is not shown. This section shows a category for "Labor (paid)" and "All Labor (including unpaid labor)" to show the difference between cash based expenses for employees and the full cost of owner labor. The "variable cost total" and the "fixed cost total" do not include the value of unpaid labor[5].

[5] Note: If one were to sum variable cost + fixed cost + depreciation from the tables in this section it will add up to the "Cost of Production with Depreciation" in Table 12 (with minor rounding discrepancies).

Depreciation

The aging and incremental loss of value to business assets (depreciation) is a significant expense for which maple producers must monitor and plan. For this cost analysis, the "tax based depreciation" is not utilized because this often overstates or accelerates the depreciation expense as allowed by IRS tax code. For this study, business assets are depreciated according to the straight-line method using purchase price and standard lifespans for each item.

In 2017 depreciation ranged from low of 6% to a high of 43% of production-based income (See 10). The average depreciation was 25% of production-based income. (Example: Using the 25% average a business earning $100,000 per year would have a calculated depreciation expense equal to ~$25,000 per year).

Table 7: Key Expenses Per Gallon (All Producers)

	Range			
	Low	**High**	**Average**	**Median**
Fuel (Evaporator Only)[6]	$0.00	$1.52	$0.67	$0.55
Labor (Paid)	$0.00	$11.59	$3.63	$2.85
All Labor (including unpaid Labor)[7]	$4.06	$37.60	$10.94	$8.57
Electric	$0.00	$3.01	$0.81	$0.73
Supplies	$0.06	$5.89	$2.03	$1.46
Variable Cost Total	$3.61	$25.30	$9.13	$6.70
Fixed Cost Total	$.73	$13.70	$4.85	$3.60
Depreciation	$3.48	$12.29	$6.95	$6.55

[6] The value of unpaid labor has been assigned based on owner hours worked multiplied by $22 per hour value.

[7] 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. Data points for $0 fuel expense were removed from average or median cost to show a usable metric for those that do manage a direct expense for fuel purchase.

Table 8: Key expenses Per Pound (All Producers)

	Range			
	Low	High	Average	Median
Fuel (Evaporator Only)[8]	$0.00	$0.14	$0.06	$0.05
Labor (Paid)	$0.00	$1.04	$0.33	$0.26
All Labor (including unpaid Labor)	$0.36	$3.38	$0.98	$0.77
Electric	$0.01	$0.27	$0.07	$0.07
Supplies	$0.02	$0.53	$0.18	$0.13
Variable Cost Total	$0.32	$2.27	$0.82	$0.60
Fixed Cost Total	$0.07	$1.23	$0.44	$0.32
Depreciation	$0.31	$1.10	$0.62	$0.59

Table 9: Key Expenses Per Tap (All Producers)

	Range			
	Low	High	Average	Median
Fuel (Evaporator Only)[9]	$0.00	$0.70	$0.31	$0.29
Labor (Paid)	$0.13	$3.48	$1.45	$1.52
All Labor (including unpaid Labor)	$0.00	$11.28	$4.41	$3.45
Electric	$0.00	$0.90	$0.33	$0.36
Supplies	$0.03	$1.77	$0.77	$0.75
Variable Cost Total	$1.68	$7.59	$3.65	$3.21
Fixed Cost Total	$0.42	$5.25	$1.95	$1.41
Depreciation	$1.07	$4.15	$2.98	$2.82

[8] See Footnote #6
[9] See Footnote #6

Table 10: Key Expenses Expressed as a Percent of Production-Based Income

	Range			
	Low	**High**	**Average**	**Median**
Fuel (Evaporator Only)[10]	0%	7%	3%	2%
Labor (Paid)	0%	20%	11%	11%
All Labor (including unpaid Labor)	18%	66%	35%	33%
Electric	0%	5%	3%	3%
Supplies	0%	19%	6%	5%
Variable Cost Total	15%	45%	28%	25%
Fixed Cost Total	3%	41%	15%	13%
Depreciation	6%	43%	25%	25%

Table 11: Bulk Producers Only, Key Expenses Per Pound

	Range			
	Low	**High**	**Average**	**Median**
Fuel (Evaporator Only)[11]	$0.00	$0.14	$0.07	$0.06
Labor (Paid)	$0.00	$0.44	$0.26	$0.26
All Labor (including unpaid Labor)	$0.36	$1.15	$0.80	$0.80
Electric	$0.00	$0.10	$0.05	$0.06
Supplies	$0.01	$0.47	$0.15	$0.11
Variable Cost Total	$0.32	$1.12	$0.62	$0.58
Fixed Cost Total	$0.07	$0.49	$0.25	$0.23
Depreciation	$0.31	$1.10	$0.69	$0.71

[10] See Footnote #6
[11] See Footnote #6

Cost of Production, Ratios and Comparisons

Table 12: Cost of Production from Operations (see "Terms and Definitions")

	Range			
	Low	High	Average	Median
COP (Operations) Per Tap	$2.33	$11.70	$5.59	$4.78
COP (Operations) Per Gallon	$5.05	$39.00	$13.98	$11.34
COP (Operations) Per Pound	$0.45	$3.50	$1.25	$1.02

Table 13: Cost of Production with Depreciation

	Range			
	Low	High	Average	Median
COP with Depreciation Per Tap	$5.19	$12.76	$8.57	$8.85
COP with Depreciation Per Gallon	$9.66	$42.55	$20.93	$20.09
COP with Depreciation Per Pound	$0.87	$3.82	$1.88	$1.80

Table 14: Full Economic Cost of Production

	Range			
	Low	High	Average	Median
Full Economic Cost of Production (COP) Per Tap	$8.17	$20.57	$11.79	$10.63
Full Economic Cost of Production (COP) Per Gallon	$14.04	$68.56	$28.96	$26.83
Full Economic Cost of Production (COP) Per Pound	$1.26	$6.16	$2.60	$2.41

Table 15: Ratios for All Producers

	Range			
	Low	High	Average	Median
Production Based Income ÷ Investment	14%	56%	30%	25%
Net Returns to Real Estate ÷ Investment	-5%	22%	3%	1%
Unpaid Labor ÷ Production Based Income	0%	66%	33%	33%

Table 16: Comparisons of Ratios for 2014 – 2017

	Averages			
	2014	2015	2016	2017
Production Based Income ÷ Investment	46%	37%	47%	30%
Net Returns to Real Estate[12] ÷ Investment	3%	0%	9%	3%
Unpaid Labor ÷ Production Based Income	19%	29%	24%	33%
Depreciation ÷ Production Based Income	20%	24%	18%	25%

The study group has shifted from 2014-2017. Certain individuals have entered the project while others are no longer participating. Despite small shifts in the participating businesses, the four-year summary above reflects the general experience of a record crop in 2016 followed by mixed crop results in 2017.

Table 17: Net Returns Divided by Investment for Tap Size Groups

	Range			
Taps	**Low**	**High**	**Average**	**Median**
2,500 - 7,499	-4%	8%	1%	1%
7,500 – 18,000	-5%	22%	4%	1%

Table 18: Full Economic Cost of Production Per Pound for Tap Size Groups

	Range			
Taps	**Low**	**High**	**Average**	**Median**
2,600 - 4,999	$1.92	$3.27	$2.39	$1.97
5,000 - 8,499	$1.83	$6.16	$3.53	$3.07
8,500 - 14,999	$1.26	$2.51	$1.70	$1.33
15,000 +	$2.34	$2.34	$2.34	$2.34

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

Top Performers

The following tables show the financial performance for producers that achieved above average profits for this study group. Profitability was measured using "Net Returns ÷ Investment." The average profit level for the entire group in 2017 was 3% and the Top Profit Group included participants that demonstrated 3.2% - 22% "Net Returns ÷ Investment."

Table 19: Average Full Economic Cost of Production Top Profit vs. Full Group (Per Pound)

	Top Profit Group	Full Group
Taps	*Per Pound*	*Per Pound*
2,600 - 4,999	$1.92	$2.39
5,000 - 8,499	$1.83	$3.53
8,500 - 14,999	$1.29	$1.70
15,000 +	$2.34	$2.34

Table 20: Average Full Economic Cost of Production Top Profit vs. Full Group (Per Gallon)

	Top Profit Group	Full Group
Taps	*Per Gallon*	*Per Gallon*
2,600 - 4,999	$21.34	$26.57
5,000 - 8,499	$20.42	$39.35
8,500 - 14,999	$14.41	$21.08
15,000 +	$26.09	$26.09

Table 21: Average Full Economic Cost of Production Top Profit vs. Full Group (Per Tap)

	Top Profit Group	Full Group
Taps	*Per Tap*	*Per Tap*
2,600 - 4,999	$10.17	$10.87
5,000 - 8,499	$10.98	$14.02
8,500 - 14,999	$8.53	$10.46
15,000 +	$10.96	$10.96

Cost of production is measured in different ways. The per pound or per gallon unit of measure will relate costs to the yield produced (Table 19-20) and provide easy reference back to market prices. The per-tap unit of measure (Table 21) relates costs to the maple resource management, regardless of yield. This provides a stable calculation for cost management for year-to-year comparison.

In 2017, the Top Profit Group consistently shows lower costs than the Full Group.

Market Channel

Table 22: Full Economic Cost of Production and Market Channel

	Range		
Market Channel	**Low**	**High**	**Average**
Bulk	$1.26 per lb.	$3.27 per lb.	$2.19 per lb.
Retail/Wholesale	$ 1.92 per lb. $ 21.34 per gal.	$ 6.16 per lb. $ 68.56 per gal.	$ 3.84 per lb. $ 42.75 per gal.

For more information on Maple Benchmark, visit the UVM Extension Agricultural Business website:

http://blog.uvm.edu/farmvia/