

The Northeast Maple Economy: Crop Distribution and Outlook

Mark Cannella, Extension Associate Professor; Mark Isselhardt, Extension Maple Specialist; Dr. Abby van den Berg, Research Associate Professor; Dr. Anthony D’Amato, Professor; Christopher Lindgren, Forest Business Coordinator, University of Vermont

The dramatic growth in the production of pure maple syrup from 2006 to 2016 saw total syrup production increasing from 1.67 million gallons in 2006 to 4.18 million gallons in 2016 or a roughly 249% increase over 11 years. The growth in production continued, albeit at lower rates, into 2020 (NASS 2020). The record maple syrup market prices near or over \$3.00 (US dollars) per pound from 2009-2013 that fueled significant industry growth have declined to largely due to a change in the exchange rate between Canada and the U.S. and is now close to \$2.00 US per pound, prompting a number of questions about the economic position of maple enterprises now and into the near future. Although the technology to

produce pure maple syrup has evolved dramatically in the last 50 years and equipment costs are significant, a large number of producers who are not exclusively driven by for-profit objectives continue to operate.

As dramatic as the growth in US maple production may be, the growth in certified organic maple production has been even greater. Between 2008, when the United States Department of Agriculture’s National Agricultural Statistics Service (NASS) began keeping records on organic maple production, and the most recent 2019 data, total US organic syrup production increased

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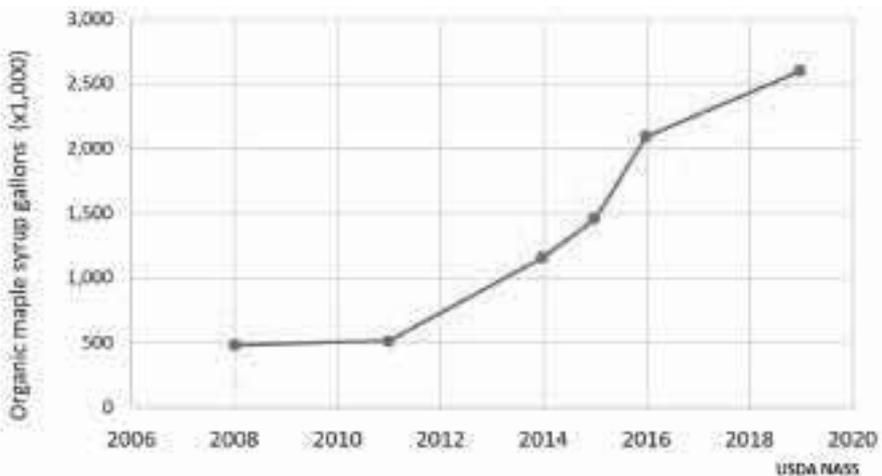


Figure 1: US organic maple syrup production 2008-2019

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from approximately 500,000 gallons to just over 2.6 million gallons (Figure 1). Consumer demand and a premium paid for organic bulk syrup are thought to be two of the leading drivers for the increase in production. Industry experts believe this demand will continue (Carbonetti et al 2020).

A survey of northeastern maple syrup producers was undertaken to explore factors of business scale, economic viability, organic production and the outlook for the maple crop in the coming years.

Methods

To explore economic and forestry factors affecting the growing maple industry the University of Vermont conducted a regional survey of northeastern maple producers using a convenience sample procedure. The UVM Institutional Review Board reviewed the

survey instrument and it was approved as an exempt social science survey. The survey was adapted into an online format using Survey Monkey™. Respondents for the convenience sample were recruited by sharing an advanced notice 7-10 days prior to survey distribution followed by the online full survey distribution. Advance notice and the active survey link were distributed via newsletters and network email lists by the following: a) Vermont Maple Sugar Makers Association, b) New Hampshire Maple Producers Association, c) New York State Maple Producers Association, and maple research specialists at University of Vermont, Cornell University and University of Maine. Survey responses were collected online from September 1, 2019 to October 30, 2019. The aggregate total of active maple producers on this list was approximately 2,500 maple producers after removing non-producing association members. Completed surveys were returned by 312 maple producers.

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Contributors

- Haigh's Sugar House Farm, LLC
- Camp Aquila
- Ohio Maple Producers Association
- New Hampshire Maple Producers Assoc.

Producer Demographics

Maple producers in thirteen states responded to the survey. The majority of responses came from producers in Vermont (34%), New York (25%) and New Hampshire (11%). Additional responses were received from northeast region states of Connecticut, Maine, Massachusetts and Pennsylvania (14%). Thirteen percent of survey respondents declined to provide a location and 2% of respondents operated in states outside the northeast. Ninety-six percent of respondents identified as male, 2% identified as female and 1% identified as a male/female partnership completing the survey.

Respondents indicated the number and the age of the primary owner(s) of the business. Two-owner businesses (38%) and single-owner businesses (36%) were most common, while thirteen percent (13%) of respondents reported three active owners. The average age of primary owner 1, primary owner 2 and primary owner 3 is 55 years, 52 years and 44 years respectively. Respondents' highest level of education completed in ranked order is: Bachelor's Degree (28%), High School Diploma (22%), Associate Degree (21%),

Master's Degree (16%), High School (8%), Doctorate (3%) and Other (3%).

Production Levels

Responding producers provided tap counts and syrup production for the 2018 and 2019 crop years. The survey also investigated prevailing sugarbush management practices, technology utilization and business management practices. The total tap counts, acres in production and crop size are shown in Table 1. Crop production reported in this survey for both 2018 and 2019 represents approximately 10% of the total US domestic crop reported by USDA National Agricultural Statistics Service (NASS 2019) Looking more specifically at northeast regional production in 2019, crop production in Vermont, New York, New Hampshire, Maine, Massachusetts, Connecticut, Pennsylvania and non-disclosed locations in this survey was a combined total of 434,903

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	2018	2019
Taps	1,174,289	1,244,315
Acres	29,221	30,164
Syrup Gallons Produced	408,274	448,019
Syrup Pounds Produced	4,547,356	4,990,036
Syrup Gallons Per Tap	0.35	0.36
Syrup Pounds Per Tap	3.9	4.0

Table 1: Maple production factors (data from survey, n=299 respondents)

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gallons compared to USDA NASS crop reports of 3,585,000 for the same states. This survey represents approximately 12% of the 2019 northeastern state crop reported to NASS.

Syrup yield was calculated using producer reported syrup production divided by producer reported taps (gallons of syrup per tap). The average yield for 2018 was 0.35 gallons per tap and the average yield for 2019 was 0.36 gallons per tap. These values compare favorably to the overall US syrup yield per tap reported in USDA NASS crop reports in 2018 (0.244 gallons) and 2019 (0.301 gallons).

Contribution of Crop Based on Operation Size

Further analysis of maple syrup pro-

	2019
1 – 4,999 taps	82.2%
5,000 – 9,999 taps	10.4%
10,000 – 19,999 taps	2.6%
20,000 taps or more	4.9%
<i>Total respondents</i>	<i>100%</i>

Table 2: Operation size (tap count) of survey respondents in four classes for 2019

duction was conducted to explore the distribution of production (tap count per business) and contribution to the overall syrup crop produced by survey respondents. Table 2 and Table 3 below provide an overview of the percentage of respondents falling into several tap size classes based on the number of active maple taps in 2019.

When looking at the 2019 crop for the two sizes classes in Figure 3 one observes that more than three-quarters of the crop is produced by a small group of producers with 5,000 taps or more. In 2019, 81% of all syrup reported in this survey was produced by only 18% of respondents, the 53 producers in the “5,000 taps or more” size class. The remaining 19% of the 2019 crop was produced by the producers in the “1-4,999 taps” size class, making up 82% of the total count of respondents. Analysis of the same size classes for the 2018 crop produced a very similar crop distribution within 1-2%.

Prevalence of Organic Production Based on Tap Count

In addition to overall crop distribution the survey collected additional information that measured the amount of certified organic syrup produced in

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Organic Status	n	Percent of 2019 Crop	Number of Taps		
			Average Tap Count	Min	Max
Yes	35	61%	17,834	200	105,122
No	247	37%	1,931	10	24,000
Transitional	12	2%	2,273	78	9,500

Table 3: Certified organic crop distribution and scale of business

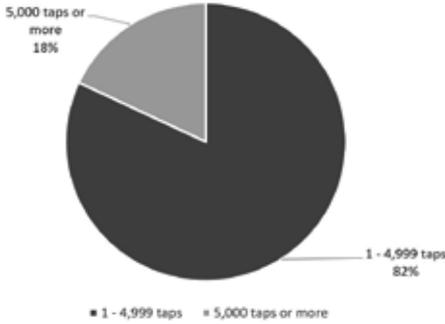


Figure 2: Distribution of operation size for all survey respondents (n= 299 survey respondents)

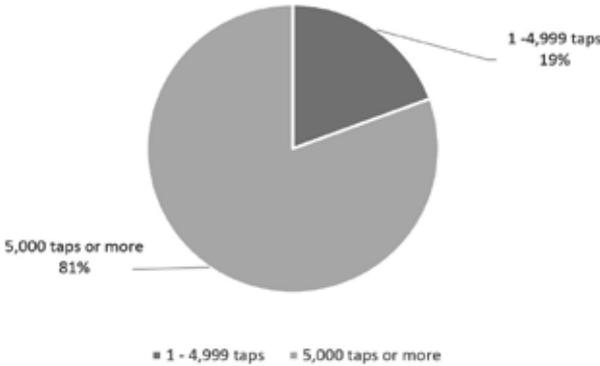


Figure 3: Distribution of reported 2019 syrup crop for survey respondents across two size classes (n=299 survey respondents)

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2018 and 2019. In 2019, 61% of the crop was certified organic with the remaining 39% either not certified or under a transitional period. This compares with the USDA NASS data that indicates 61% of the 2019 US crop was organic, up from 17% in 2011. Table 4 be-

low demonstrates that the average tap number for organic producers is larger than the average tap numbers for producers that are not currently certified.

Expansion Plans

Survey respondents indicated if they planned to change the scale of their maple enterprise in the next three years. We observe an equal number of respondent businesses likely to expand their scale (49%) as those likely to stay at the same scale (49%). Two percent (2%) of responding businesses plan to downsize their scale over the next three years. Given the stark contrast in scale of maple enterprises contributing to the total annual crop, a further investigation of tap number, yield or organic status could identify potential trends in production changes in the next three years. Table 4 provides this information.

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	n	Average Taps	Minimum Taps	Maximum Taps	Average Yield	% Certified Organic
Plan to expand in next 3 years	139	5,288	10	105,122	0.30	16%
Plan to Stay the Same	137	3,057	19	100,000	0.27	11%
Downsize	7	1,251	200	3,500	0.41	0%

Table 4: Characteristics of businesses based on planned changes to scale

The presence of only slight differences between the “plan to expand” group and the “plan to stay the same” group in addition to large ranges in taps size suggest there is not a functional difference in these two groups. Enterprises planning to expand are more similar to those planning to stay the same size according to the variables of tap number, average yield and organic status.

Conclusions

As the US domestic maple syrup crop continues to grow the influence of different scales and types of business can shape local communities and national trends. Survey results presented here demonstrate the dramatic difference in the scale of maple enterprises as represented by tap count and the resulting working forest acres these businesses utilize. Survey respondent business scale ranged from 10 taps to more than 105,000 taps. Our survey findings verify that the majority of maple syrup producers in the Northeastern region operate at scales under 5,000 taps. Meanwhile, a small number of producers operate at 5,000 taps or more and this smaller group is responsible for over 80% of the maple syrup production in this survey group.

Approximately 60% of the maple crop in this survey is certified organic, produced mainly by a small group of larger enterprises. The market demand

for organic syrup remains strong and has been driven to a large degree by changing consumer preferences, especially in areas beyond where maple syrup is produced. If these preferences continue as expected it is likely more producers will transition to certified production (Carbonetti et al. 2020).

These distinctions are expected to have influence in marketing trends, policy and industry organizations. As maple marketing grows to keep pace with production the presence of promotional messages the use business scale as a proxy for product quality is observed. Despite scale, however, there are existing maple quality standards that ensure uniformity and consistency of high quality syrup to consumers regardless of the production scale. The growing number of businesses seeking to differentiate their product, however, are likely to continue to adapt messaging that promotes process based attributes or other features that may appeal to consumers.

Though the barriers to entering the industry are relatively low for those who are motivated by noneconomic factors, the substantial syrup crop contribution by a small number of producers may have implications to ongoing industry organizations, policy advocacy and policy compliance. Future deci-

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sions have the potential to impact size classes differently and there is potential for disproportionate representation of the number of businesses impacted compared to the actual crop impact in the marketplace and forested acres impacted.

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