

## **Maple Syrup Production**

**Mathew Nichols and John Root**

**SUNY Potsdam**

### **Author Note**

John Root, Technology Education Teacher, Brushton-Moira Central School.

Mathew Nichols, Department of Online Learning, SUNY Canton.

This research was supported by the SUNY Potsdam and SUNY Canton Online library database.

Correspondence concerning this article should be addressed to John Root, Technology Education, BMCSD, Brushton, NY 12916.

Contact: [rootjl197@potsdam.edu](mailto:rootjl197@potsdam.edu)

Mathew Nichols, Online Learning Department, SUNY Canton, Canton, NY 13617. Contact: [nicholmc198@potsdam.edu](mailto:nicholmc198@potsdam.edu)

### **Abstract**

The purpose of our research was to explore whether Maple producers in Franklin County, New York are benefiting as members in the Franklin County Maple Association. We performed a through literature review to develop an understanding of the various aspects of the maple harvesting processes. We gained insight into the maple sugaring process from tapping the trees, boiling, bottling, marketing, distribution, and selling.

We developed and distributed a paper based survey consisting of 17 questions targeting the 54 members of the Franklin County Maple Association. The study took place from February 2014 through May 2014 with a 46% response. We went to visit sugar houses to hand out and collect the completed surveys.

Based on the data we collected, the local members of the F.C.M.A. are 100% satisfied with the association. A small percentage of members who are satisfied with the association said some changes need to be done to host maple schools and workshops throughout the year in monthly meetings not just once a year. Surveyed members harvesting methods differ from traditional to commercial harvesting with arguments of which method produces better quality syrup. The Association is working with members to host meetings at different locations, and have presenters at meetings to address issues with maple education within the association. Overall, the F.C.M.A is meeting member's expectations, and maple production seems to be going strong in Upstate NY. Members are doing their best to keep the tradition of sugaring alive in the county.

**Keywords:** maple, harvesting, sugaring, sap, syrup, education, technology, Franklin County, New York

## **Maple Syrup Production:**

### **Introduction**

Maple Syrup production is a tradition that started thousands of years ago. Today, people all over the country consume maple syrup. Many people are unaware of the processes taken to produce this sweet syrup. There are many different methods that can be taken when harvesting and boiling sap to produce the syrup. Some producers are in the industry purely for profit; to produce the largest quantity of maple products as they can in a short timeframe, using advanced technologies. Others focus on a quality product using traditional methods, keeping the original heritage of maple sugaring alive.

Along with producing the product there are many different ways to bottle, market and distribute the syrup. Each method used has its own strengths and weaknesses in the industry. Consumers need to be willing to pay the high price of pure maple syrup, and the producer needs to do their part in order to sell their product. With the rising popularity of organic and natural food sources, maple syrup has attracted attention as an all-natural sweetener, which makes it a valuable product in the current U.S. market. This increases the demand and price even more when coupled with the fact that syrup can only be harvested in the spring time with the weather permitting, restricting supply.

### **Literature Review**

The maple syrup harvesting process is speculated to be 10,000 years old. It's believed Native Americans in the Michigan area were the first to harvest sap and produce syrup. Skeptics say the process couldn't have been performed without the iron brought over by the early European settlers. It wasn't until the mid-1500s that maple syrup production was sparsely documented as French explorers in the New England area met with Natives. It was known as an "agreeable liquid," "liquor," "Indian sugar," and "Indian melasses." The Native Americans spoke of the process as having a long history, rooted in their culture (Graham, 2005), (Hopley, 2003).

The process itself wasn't extensively documented until the eighteenth and nineteenth centuries. Native Americans were renowned for harvesting the sap of the maple trees and extracting the sugars to produce a sweet syrup. They would collect the sap in birch bark baskets and boil it under an open fire in large clay arches. Only primitive tools were available at the time and the process was time consuming. It's easy to see that maple syrup harvesting is rooted in history, folklore, and tradition. The process and the product is valuable in many ways. It provides a conduit for passing tradition and culture, as well as a domestic source of sugar and income for local families. It is important to keep the tradition of making maple products alive (Graham, 2005), (Hopley, 2003), (Thomas, 2005).

The production of maple syrup is called "sugaring." Sugaring is the process of identifying and tapping maple trees, collecting sap, and extracting the sugars from the sap to produce syrup. For sap to run into the buckets, the temperature needs to be above freezing during the day (32°F or above) and below freezing at night (32°F or lower.) The sugaring season is relatively short only lasting three to four weeks (Manguson, 1997).

The first step in sugaring is procuring a “sugar bush.” Maple trees need to be clearly identified. Leaves provide the best method of identification. During the sugaring season the trees have no leaves. It’s crucial to take note of trees and mark them in advance. There are also different species of maple trees; the sugar maple, silver maple, black maple, and red maple. All of these maples can be tapped and will produce a similar flavor of syrup (DeBellis, 2013), (Graham, 2005).

Tapping maple trees is a fairly simple process. A ½ inch hole is drilled about four feet up the trunk and about 1 ½ inches into the third layer of the tree, known as the “sap wood.” Once a hole is drilled, an aluminum spile or a tap is inserted to allow sap to run freely. A bucket is hung on the end of the tap to collect the sap. On average a maple tree produces about 1 gallon of sap per run with the weather permitting. Once sap is collected it is filtered and boiled in an evaporator to get rid of any excess water and bring out the sugars (Corbin, 2004).

Each maple producer has their own unique way of boiling their sap to differentiate their syrup from other producers. The syrup’s flavor becomes stronger and the color becomes darker as sap is boiled for longer periods of time. A grading scale is used to describe these different syrups. The syrup is graded on a spectrum with the labels ‘Light Amber,’ ‘Medium Amber,’ ‘Dark Amber,’ and ‘Commercial Grade.’ Each grade has a unique taste and each producer has their own opinions as to which grade tastes and sells better (Fruth, 2009).

It’s backbreaking work for “sugar makers” to harvest traditionally with taps and buckets. Technological advances promise some relief, but the fact remains that 40 gallons of sap only yields 1 gallon of refined syrup. In the past the sap was boiled in the woods to ease the difficulties of storage and transportation, only a couple examples of the many inconveniences of syrup production (Hopley, 2003).

Maple syrup has a variety of uses, it isn't just a delicious topping for pancakes! There is an ever growing number of products that use maple syrup as the main flavoring additive. There is maple coffee, creamer, beer, wine, candies, deserts, popcorn, the list goes on! Maple syrup can be refined and boiled down even further to make maple sugar. Tapping, collecting, boiling, bottling, and selling is a lot of hard work but the reward is sweet and the value of a pure, natural, versatile product is well worth the effort (DeBellis, 2013).

There is a significant push for people to purchase locally grown food with the "Eat Local" movement. Graham's survey results indicated that 99% of Ohio producers strictly distributed to the state of Ohio! Harvesting and refining maple syrup creates a "traditional source" of locally refined sugar, reducing our dependence on imported sugars. Maple syrup and wine seem to be the favorite of some food and drink enthusiasts. Harvesting contributes to tourism as well, as people visit the region to see where and how the maple syrup was produced. Although harvesters are not rich by societal means, they develop a passion for the work they do, producing the syrup (Debellis, 2013), (Graham, 2005), (Lockhart, 2010).

Consumers are more apt to buy their maple syrup locally rather than at the grocery store when they live in a community that is home to local maple producers. Maine is host to an open farm day which is similar to a farmers market, where there is local produce and maple syrup available for the general public to purchase. The produce that is harvested and sold in Maine is accountable for \$1.2 billion of revenue for the economy. Not only are consumers buying organic pure maple syrup, they are also helping the community by buying local (Quimby, 2013).

Advertising is commonly done locally as well. 36% advertise at farm gate sales. 6% advertise through mailing lists, 4% advertise through newspapers, 3% through mail orders, 2%

through web page sales, 1% radio advertisements, 1% trade publications. Word of mouth advertising and repeat customers were not assessed (Graham, 2005).

The final outlook of maple production is very promising. Only the North American continent produces maple syrup and only 12 states harvest it in the U.S. The Ohio maple industry alone supplements the state's economy with \$5 million each year. It is known as a "super food" with health benefits. The demand for maple syrup and other products is greater than the state's producers can harvest (Romaker, 2014).

Last year maple syrup sales soared to \$40 million in Vermont. That is double the amount from the last six years. This is possible with advances in technology that allow maple producers to tap trees with plastic pipe line and use vacuum pumps to pump the sap into the "sugarhouses," where the sap is filtered, processed, and packaged. Producers can tap more trees and collect more sap, producing more syrup. With the maple market growing, producers want to maximize their resources and produce as much product as they can in the short season. Economies of scale lightens the cost of production. With technology improving the process, it begins to deviate far from the traditional methods of collection buckets and boiling (Graham, 2005), (Melody, 2013).

Ohio led the nation in production in the late 1800's, but it's now the fifth ranked state overall. There was a record 3.2 million gallons of syrup produced in the United States last year alone. The U.S. hit record high maple production due to good weather, climate conditions and a larger number of taps in use. A few examples of the many factors that affect the yield (Canfield, 2013), (Graham, 2005).

Maple syrup is very valuable since the market is dynamic and unpredictable. Graham's survey results indicated that 82% of Ohio producers sell their maple syrup for supplemental

profit. Of the 82% that sell syrup, 64% said that they sell retail, 23% sell bulk, 17% sell wholesale and 8% buy syrup for reselling. 14% sold to in state retailers, 14% sold to in state bulk buyers, 12% sold to farmers markets, but only 1% sold out of state (Graham, 2005).

Maple producers in Quebec Canada have come up with a possible solution to supplement the market during sugaring seasons with low yields due to weather conditions. Quebec maple producers have created a “maple reserve” that is storing syrup for less productive seasons. There is a steady product always available for consumer purchase. Along with the reserves helping to sustain maple sales there are various marketing, advertising, and storage methods used (Canada, 2013).

The industry is now ruled by pipelines and vacuum pumps. Efficiency has vastly improved in the maple producing states. They have progressed far beyond collecting sap with buckets hanging from trees. The sap is now pumped into underground tubs and sent through reverse osmosis (R.O.) machines for filtration. Although the initial startup cost can be high, usually the gross revenue from the maple syrup exceeds it (Hopley, 2003), (Melody, 2013).

A maple producer’s greatest investment is in the purchase of equipment to increase production efficiency, and profitability. Among those considered are UV lights, reverse osmosis units, steam hoods, electronic “take off” units, and pressure filters. Maple production is a decent primary income in Vermont, although it traditionally only provides a supplemental income. There are now 3,000 commercial maple producers. That’s an increase of 1/3 in a decade. Even some dairy farmers are selling their cows to focus on maple syrup (Graham, 2005), (Hopley, 2003), (Melody, 2013).



Regarding income, Graham's Ohio based survey reported "53% of Ohio based producers received an annual income from sugaring. 34% earn 1% - 5% annually; 11% earn 6% - 10% annually; 5% earn 11% - 20% annually; 1% earn 21% - 30% annually; .5% earn 31% - 40% annually; .2% earn 41% to 50% annually; .7% reported it as their primary income with more than 50% annually from maple harvesting (Graham, 2005)."

A recent Canadian invention could revolutionize the harvesting process. Maple trees aren't typically tapped until they are about 35 years old. A standard maple sugar operation usually has about 80 full grown trees per hectare and they produce about 150 gallons of maple syrup. This innovation is designed to boost syrup yield without having to purchase more land for trees. It would allow production as soon as 7 years after planting, allowing 6000 saplings per hectare, producing 10 times the amount of maple syrup. It sounds exciting, but it has its sceptics (Andrea, 2014).

Storage technology continues to improve as well. Maple syrup is an oxygen sensitive, hot filled, natural sweetener. Shelf life has been greatly extended by creating a multi layered bottle with an oxygen barrier to prevent oxidation ("Multilayer bottle gives," 2014).

### Research Questions

To better understand maple production in Franklin County, we wanted to approach the producers themselves to see what products they specialize in, what methods they choose to collect and boil their sap, and how they market and value their products. In order to achieve this goal, we developed primary research questions, and refined them into specific sub question, ultimately developing them into survey questions.

1. How can maple producers contribute to the Franklin County Maple Association?
  - a. What is the history and tradition of the local producers?
  - b. What are the production processes used by local producers?
  - c. What is the economic impact of local producers?
  - d. What are local producers' current marketing strategies and sales approaches?
  
2. How can the F.C.M.A assist local maple producers?
  - a. What is the F.C.M.A. doing to maintain and preserve the history and traditions of maple syrup producers in the region?
  - b. What can the F.C.M.A. do to improve the production process for local producers?
  - c. Can the F.C.M.A. improve marketing and sales for local producers?

## **Methodology**

Our research study was done using basic survey methodology, but our process was progressive. Each step of our methodology was done with a specific purpose in mind; building a framework of understanding, and collecting specific information to support the following step in our research process.

Our research purpose was clearly defined from the beginning of our study to make our objectives clear throughout our work. A literature review was performed to gain a thorough understanding of the research topic and to help develop clear research questions. Research questions were then developed to define and explore our research purpose. A first draft of the survey was created to find variables in our survey structure and prepare for testing. Pre-testing highlighted any errors or edits to be made for the final survey. The final survey collected effectual data for our content analysis.

## **Research Purpose**

Our study focused on maple production, specifically targeting members of the Franklin County Maple Association located in Franklin County NY. The primary goal of this study was to explore whether the Franklin County Maple Association is doing its part in promoting maple production and supplying members with helpful resources to be successful in the maple products industry. Along with understanding the role of the F.C.M.A., it was goal of ours to reach out to the members of the association to find out their individual harvesting practices and their overall satisfaction with the F.C.M.A. The data collected using our surveying methodology will help the association improve and meet the needs of the members as well as increase maple production within the area.

## **Literature Review**

We performed a thorough literature review to develop a framework of understanding of the various aspects of the maple harvesting process. We gained insight into the maple sugaring processes tapping the trees, bottling, marketing, distribution, and selling. We are able to understand and describe the history and societal tradition of the process on a much more profound level. The knowledge gained helped define our research questions.

## **Research Questions**

We developed our primary research questions to align with our research purpose. Sub questions were created to address these primary questions and increase respondent specificity. Our research questions helped design our interview framework.

## **Interviews**

We conducted interviews with two members of the association. We developed interview questions specifically for John St. Mary, the president of the association, and Joy Hastings, the secretary and treasurer. We conducted our interviews in early February 2014 just before the start of the sugaring season. This gave us ample time to complete a rough draft of our survey questions based on the data we collected through the interviews.

## **Draft of Survey**

A draft paper survey was then designed to explore the real world variables related to our research questions. It mainly consisted of our refined research questions, combined with the knowledge gained from our literature review and respondent interviews. This survey was created to prepare for pre-testing.

### **Pre-testing**

The next phase of the data collection process was to complete a pre-test with a small group of members to represent the association. One member of our group attended an F.C.M.A. meeting, and conducted a small focus group to distribute the paper based survey to 5 active members. Once pre-testing was complete, we completed IRB review forms, and confirmed that our research was only subject to an expedited IRB review. We received approval upon the completion of pre-testing to conduct surveys March 12<sup>th</sup> through March 26<sup>th</sup>. Pre-testing provided positive feedback for our final survey structure.

### **Final Survey**

We put the feedback received from pre-testing to good use. We created demographic, descriptive questions for data analysis, data interpretation, and data correlation. We allowed members to select more than one answer when completing certain questions, as well as adding an optional income based question.

Our survey instrument consisted of 4 distinctive sections, with distinct goals, which the respondents were unaware of. The first section asked subjects for basic information stating their gender, household income, and role in the association. The second section focused on their production and boiling techniques. The third section covered why they produce maple syrup. The final section addressed what improvements they would like to see in the association.

The final survey we developed was designed with the Franklin County Maple Association and its member's interest in mind. We went to each member's individual sugar house to complete and collect paper based surveys. We provided our subjects with self-addressed stamped envelopes to allow them to complete the survey at their leisure and mail it back to us.

We went as far as providing an online alternative using Google Surveys to increase respondent rate, and to take advantage of data collection, and content analysis tools provided in the utility.

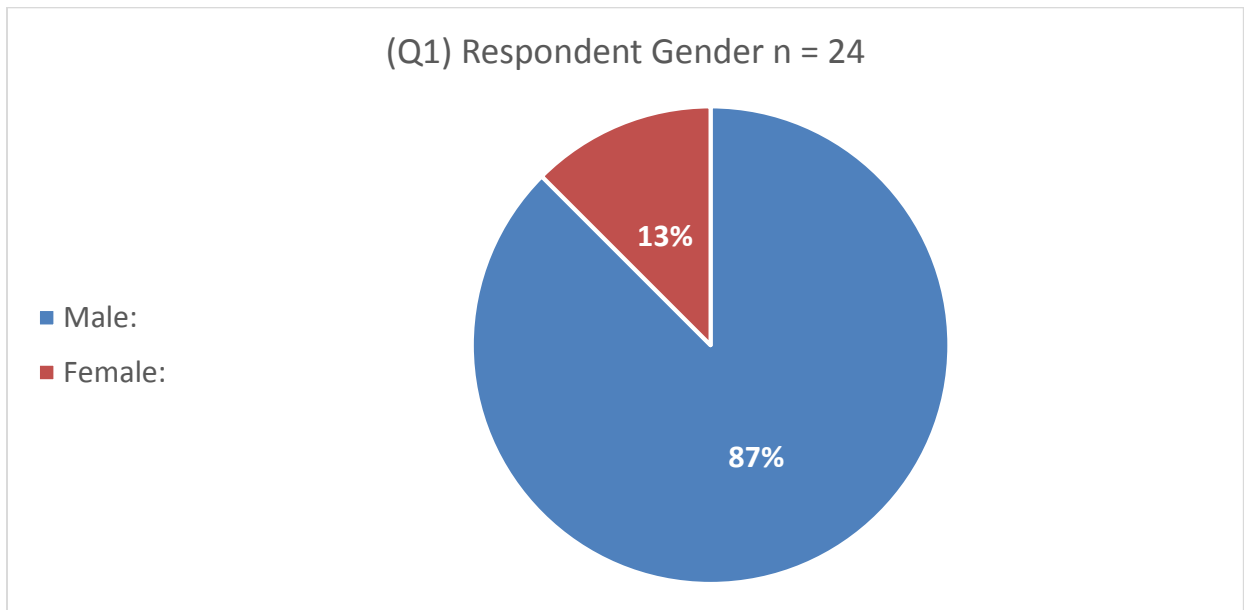
The survey distribution lasted approximately 2 weeks in late winter through early spring, at the start of the sugaring season. We distributed the survey to 54 members of the F.C.M.A. and received 24 completed surveys back for a 45% return rate.

### **Data Collection and Content Analysis**

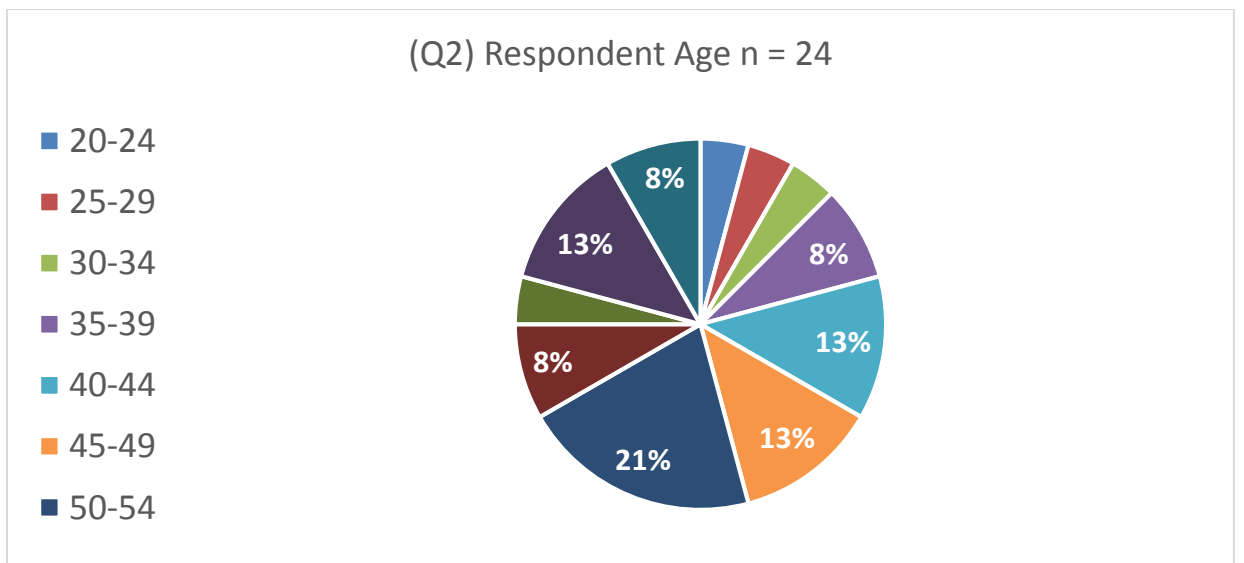
Once the final surveys were complete and collected we took the paper based survey and manually input the data into the Google Survey to take advantage of the basic data collection and content analysis tools available. We wanted the Excel “Responses” spreadsheet, and the visual charts Google offers. We imported the tabulated data from Google’s spreadsheets into a Microsoft Excel workbook. We then created individual spreadsheets and charts to address the data collected for each survey question.

**Results**

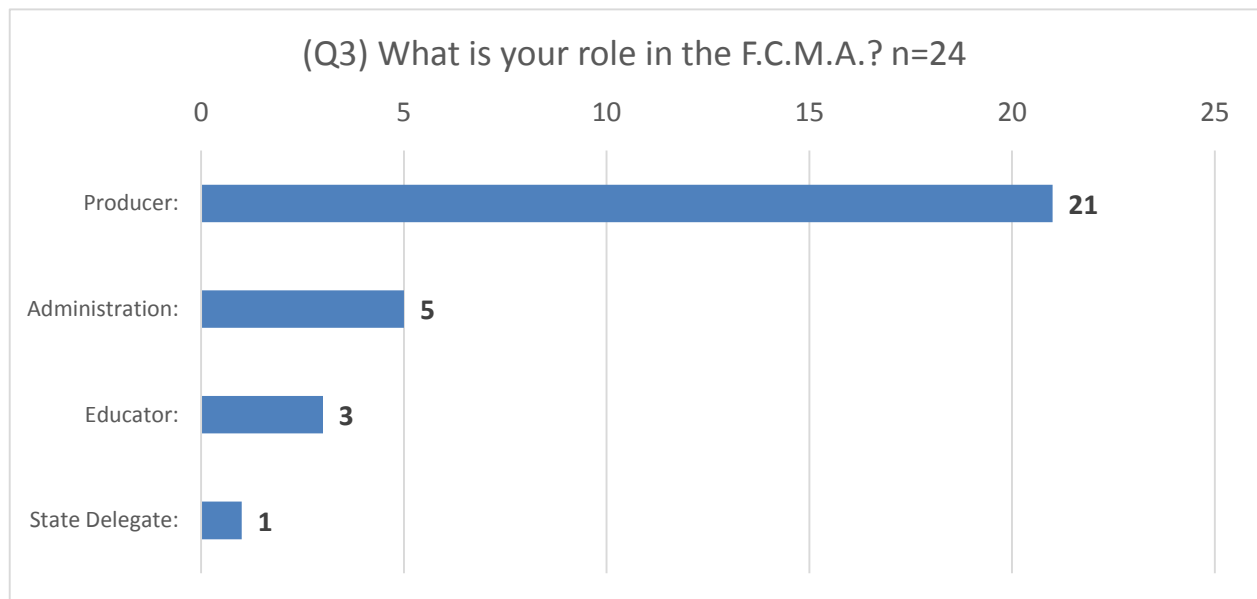
Of the 24 members surveyed for the study, 13% of participants were female and 87% were male. There were no major differences from results gathered from different genders.



We asked the participants to provide us with their age. There was an age group ranging from 20-73 years of age. The top age bracket was age 20-24 being 26% with 35-39 at 18%.



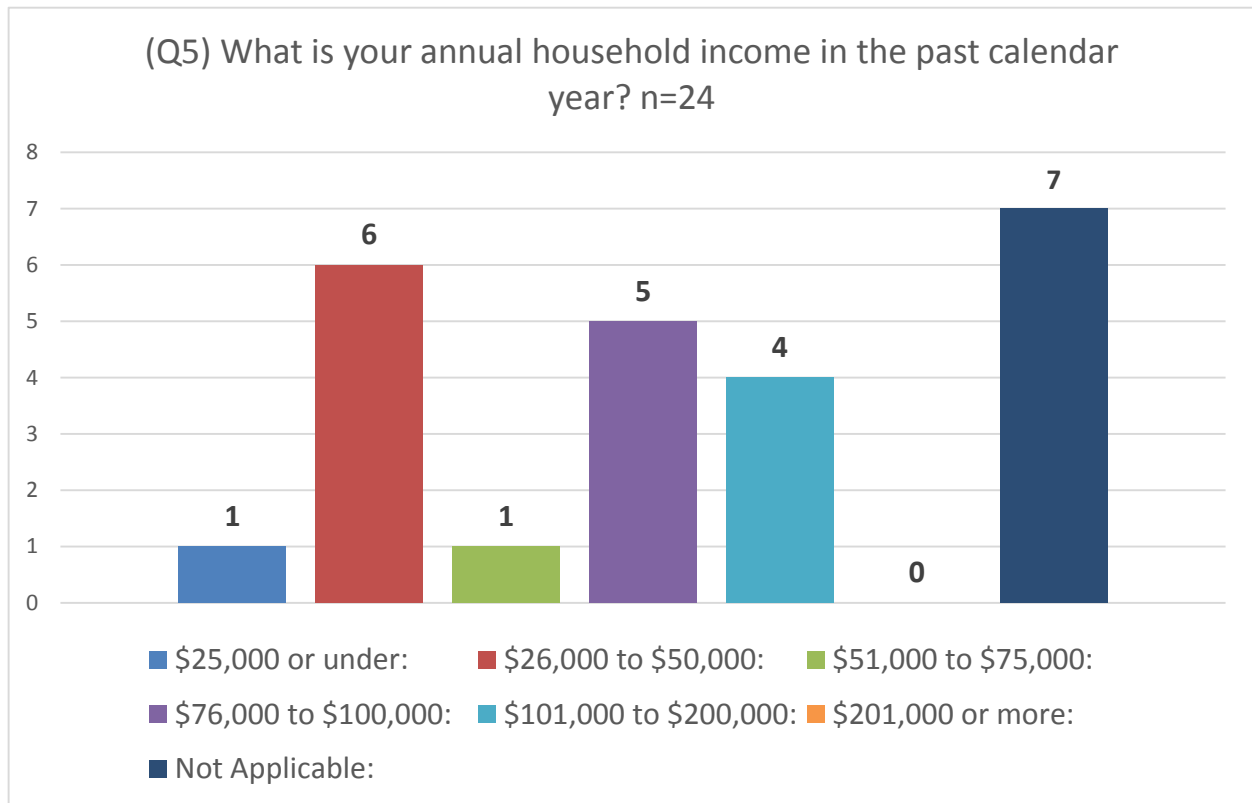
We wanted to know what roles members surveyed played in the Association. To do that we listed specific categories for respondents, such as administration, educator, producer, and state delegate for the NYS maple association. Only 5 of the respondents were part of the administrative body of the F.C.M.A. There were 3 respondents that designated themselves with the “Educator” role and 1 reported as a “State Delegate.”



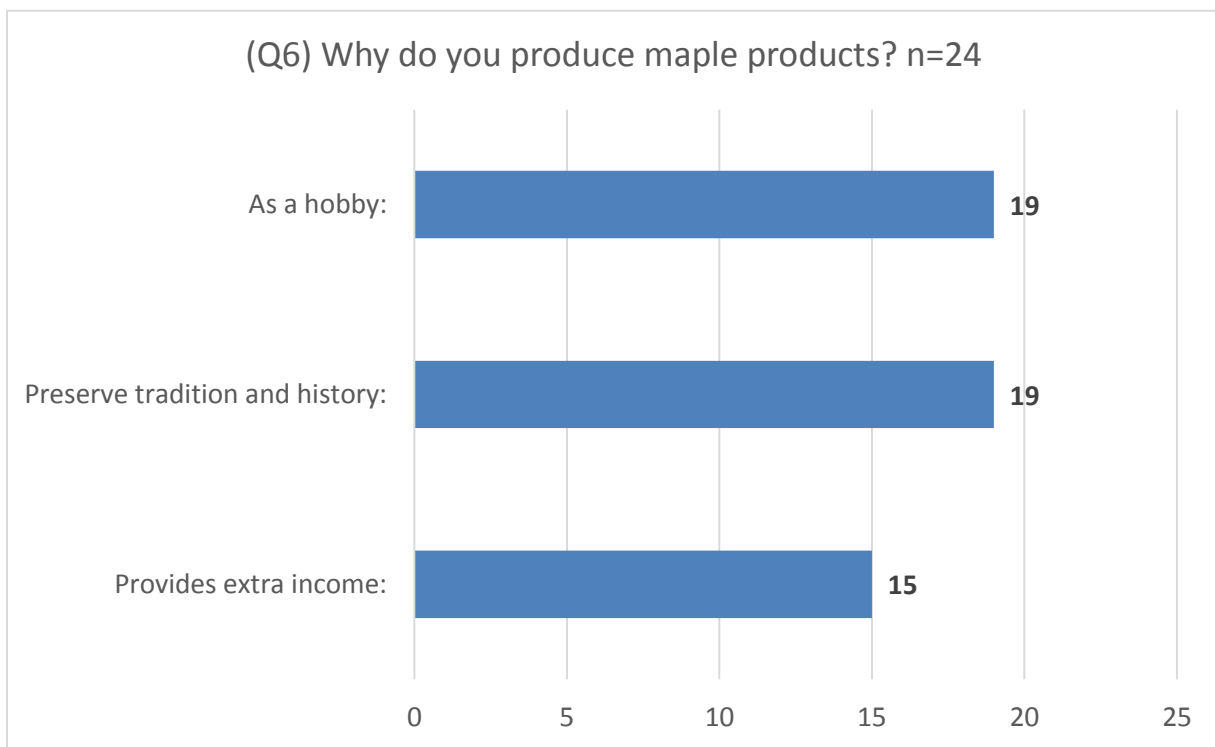
We wanted to see what percentage of members surveyed used maple syrup sales as a primary source of income. We found that 100% of members surveyed do not use maple syrup production as a primary means of income.



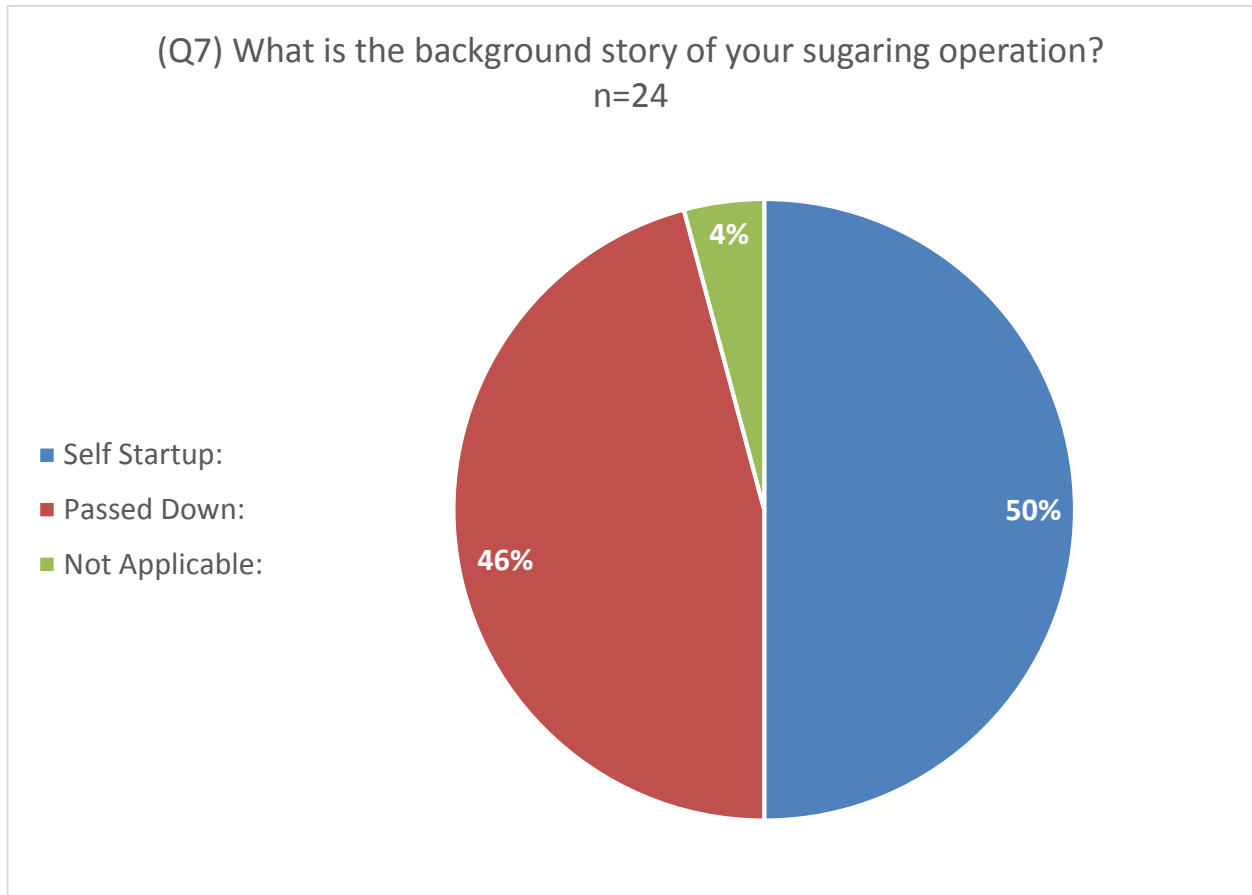
Along with examining maple syrup production as the respondent’s primary source of income, we needed to explore the annual household income of producers to find out the economic impact of the surveyed members. This was a sensitive question. Therefore it was the only question given the option for the respondent to select “Not Applicable.” We can see in the chart that most respondents did. However the results show a majority (6) in both the \$26,000 to \$50,000 bracket and (5) in the \$76,000 to \$100,000 bracket. We came to the conclusion that the total household income plays no role in maple syrup production within the association. If anything the income of certain members may allow them to invest in advanced technologies to produce more product in a shorter amount of time.



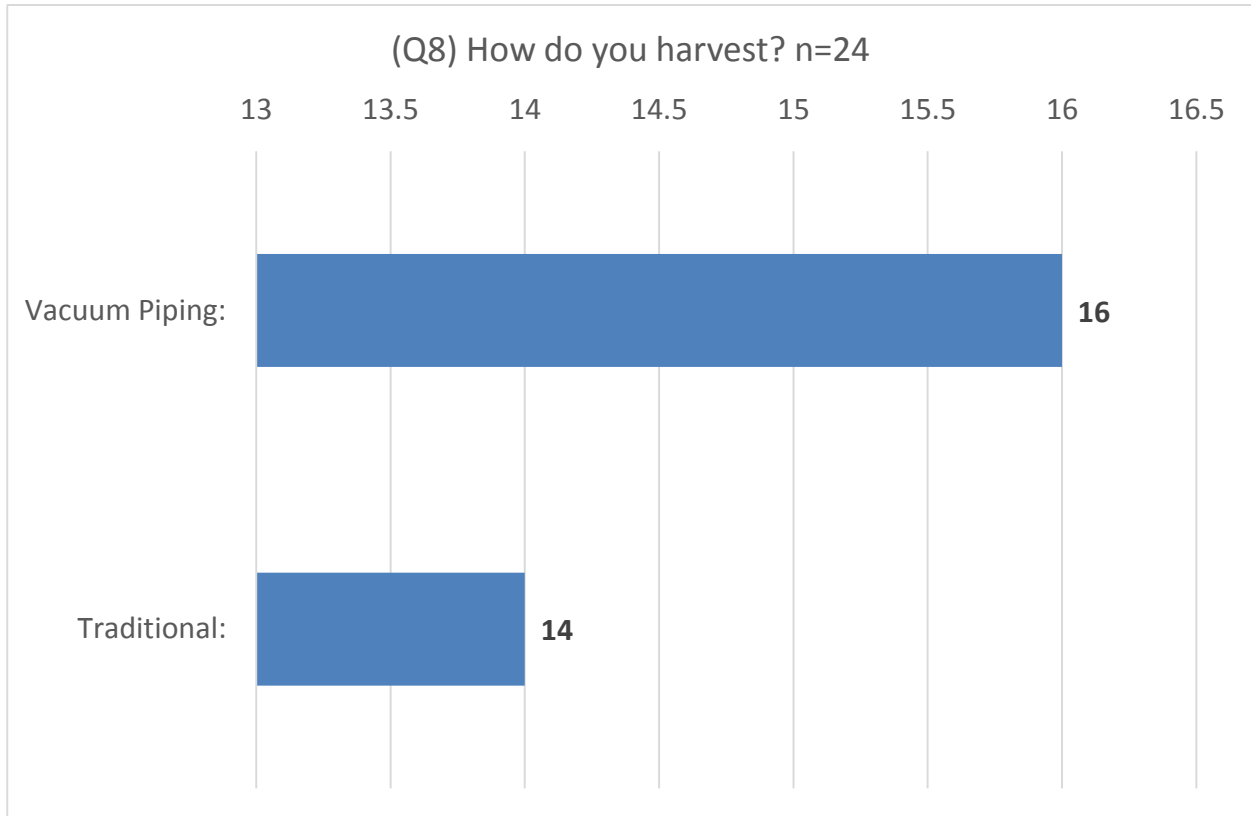
Examining the annual household income of members surveyed created a Segway to explore the methods members choose to use to produce their product. This question was created to address the history and tradition of the local producers as well as to investigate what the F.C.M.A. does to improve the production process for local producers. According to the chart, there is a pretty even distribution between extra income, preserving tradition and history, and harvesting as a hobby. Most respondents chose all three options.



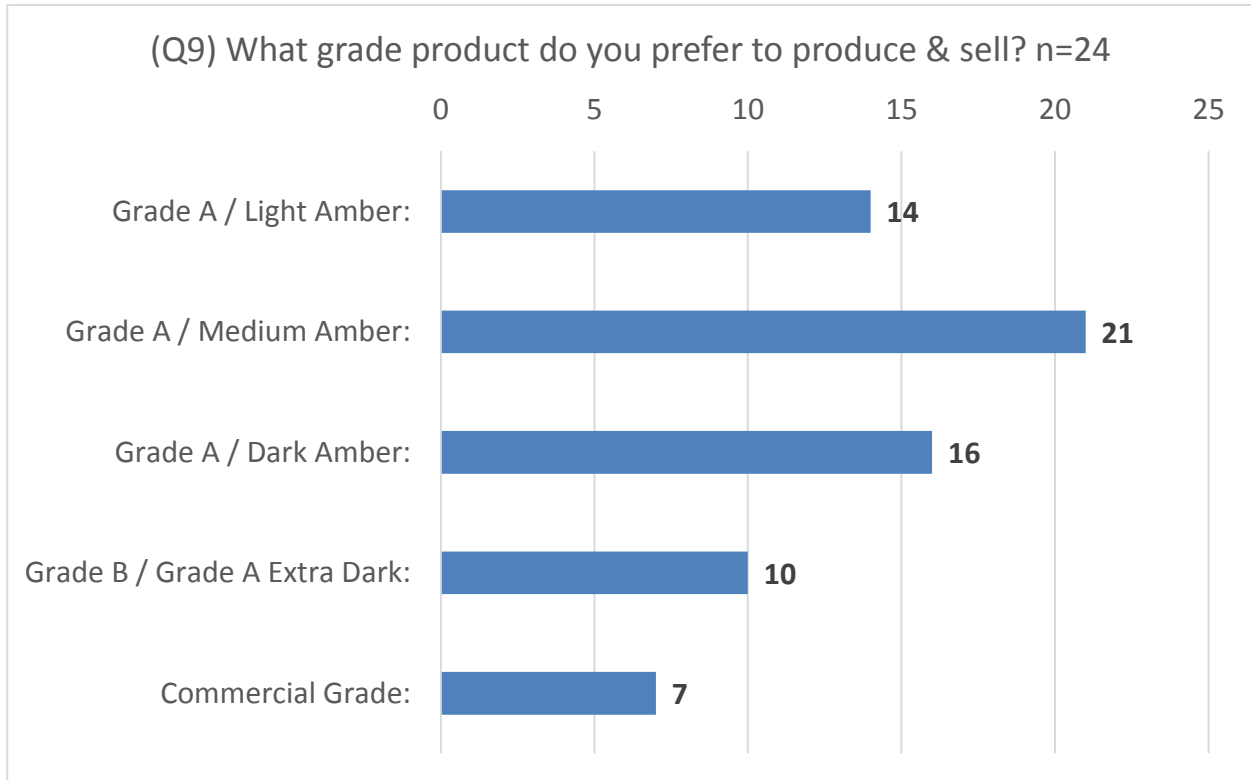
To align our next question with why respondent choose to produce maple products, this question was created to address the history and tradition of the local producers. Respondents produce for a variety of reasons. According to the chart, there is a nearly even distribution with (12) respondents running a self-startup, and (11) respondents running a family passed down operation.



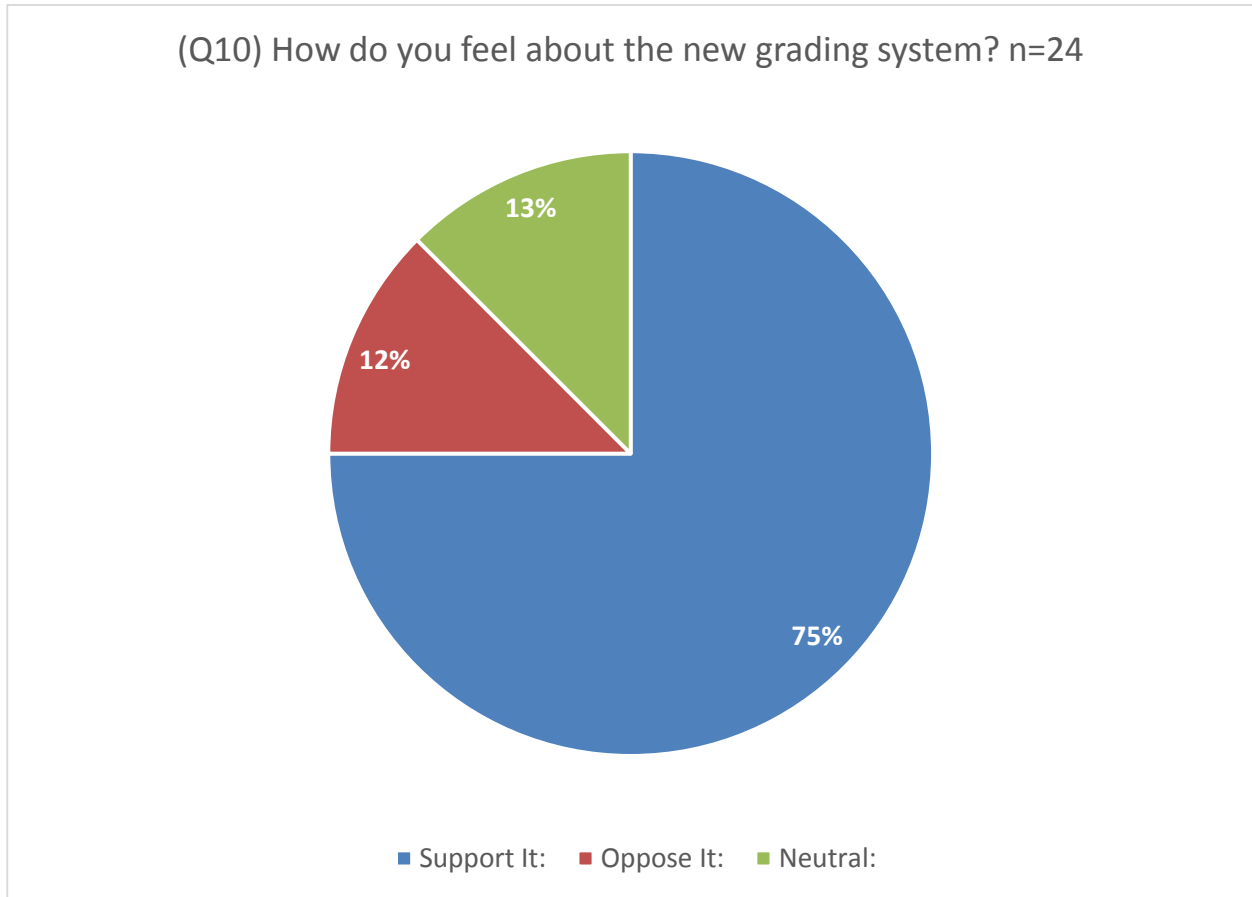
Harvesting maple syrup can be completed many different ways. This question was created to address the production processes used by local producers as well as to investigate what the F.C.M.A. does to improve the production process for local producers. According to the chart, there is a nearly even distribution between those using new age vacuum piping methods (16), and those using traditional methods (14.) we concluded that the use of vacuum piping and reverse osmosis machines allowed producers to collect sap faster and boil in less time producing more syrup faster than normal.



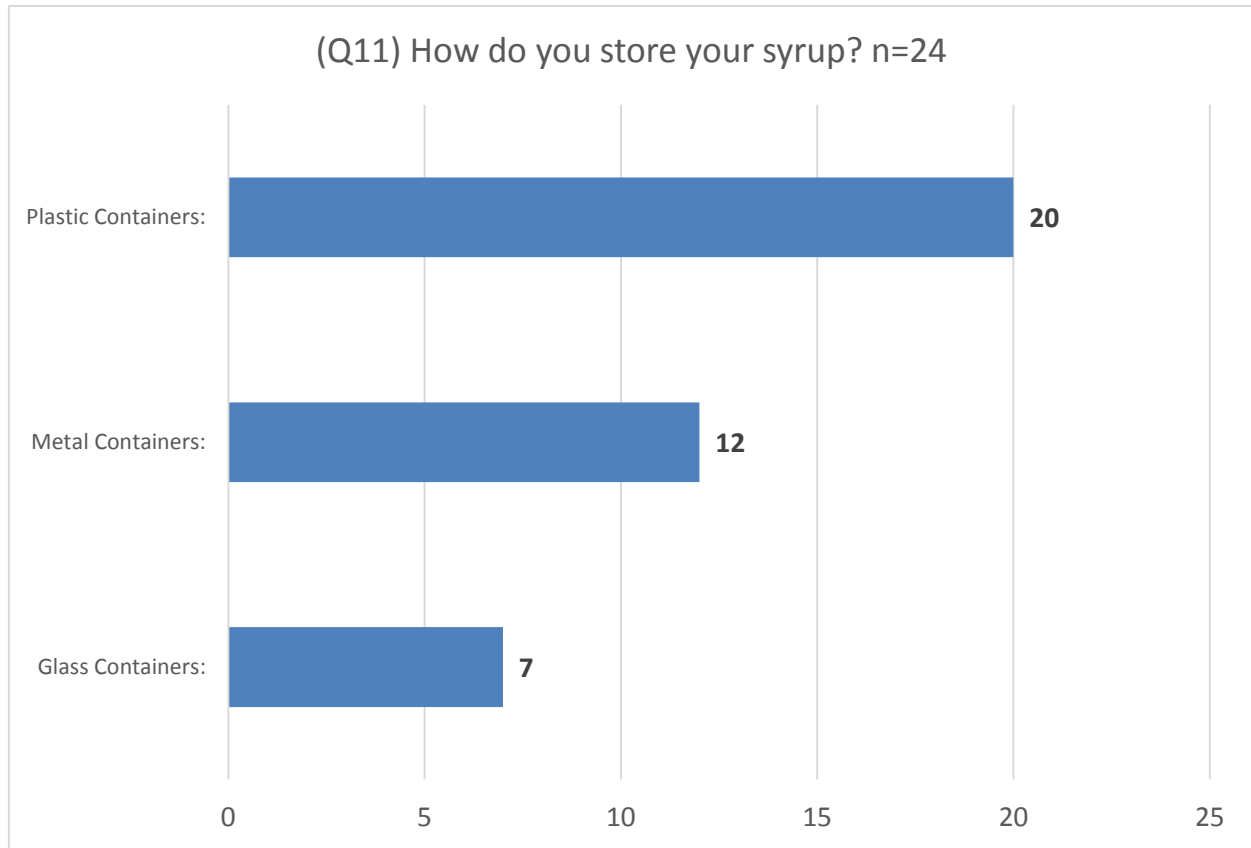
When harvesting maple syrup weather using vacuum piping or traditional buckets, different grades or colors of syrup are produced. This question was created to address local producers’ current marketing strategies and sales approaches as well as to investigate what the F.C.M.A. does to improve the production process for local producers. Most respondents produce and sell Grade A / Medium Amber (21) maple syrup, however Grade A / Dark Amber (16) and Grade A / Light Amber (14) were not far behind. Grade A Medium Amber seemed to be a popular product that sells well in this area.



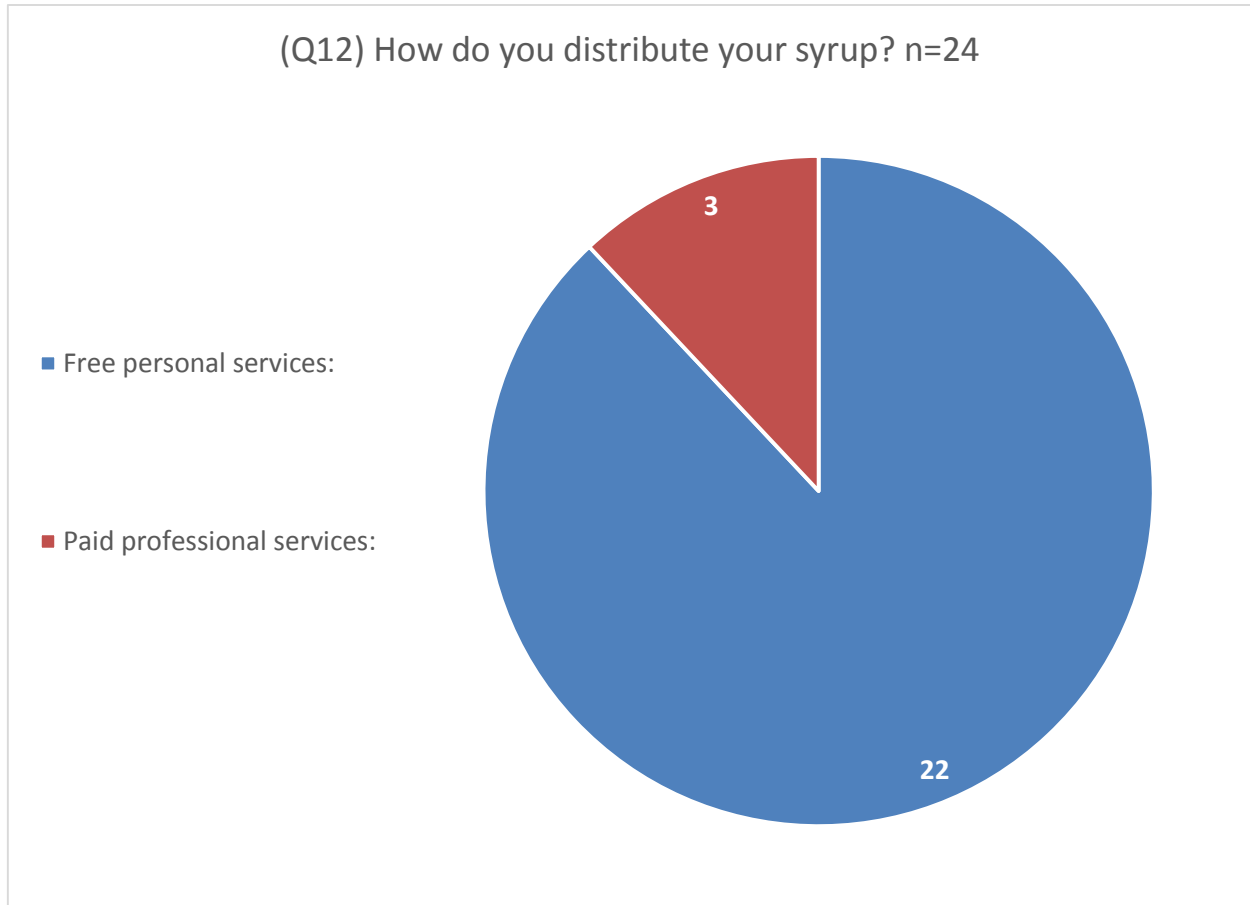
With different grades of syrup, producers have to go through a grading process to label their product. Grade depends on the sugar content of the sap as well as the time of year the sap is collected and boiled. This question was created to address local producers’ current marketing strategies and sales approaches as well as to investigate what the F.C.M.A. can do to improve marketing and sales for local producers. A majority of respondents support the new maple syrup grading system (18.) However, there are a few producers that oppose it (3.) The majority supported the system due to the market value of the product and the demand that the product yields. Consumers will still buy the product regardless of the grading system.



After the product is produced we asked respondents which method they use to store their syrup. This information can be used to determine which container sells best, as well as reveal a marketing technique used to gain the most profit out of the product. The overwhelming majority choose to store their maple syrup in plastic containers (20.) However, metal containers aren't far behind (12.) Storing syrup in metal containers allows producers to easily sell their product wholesale.

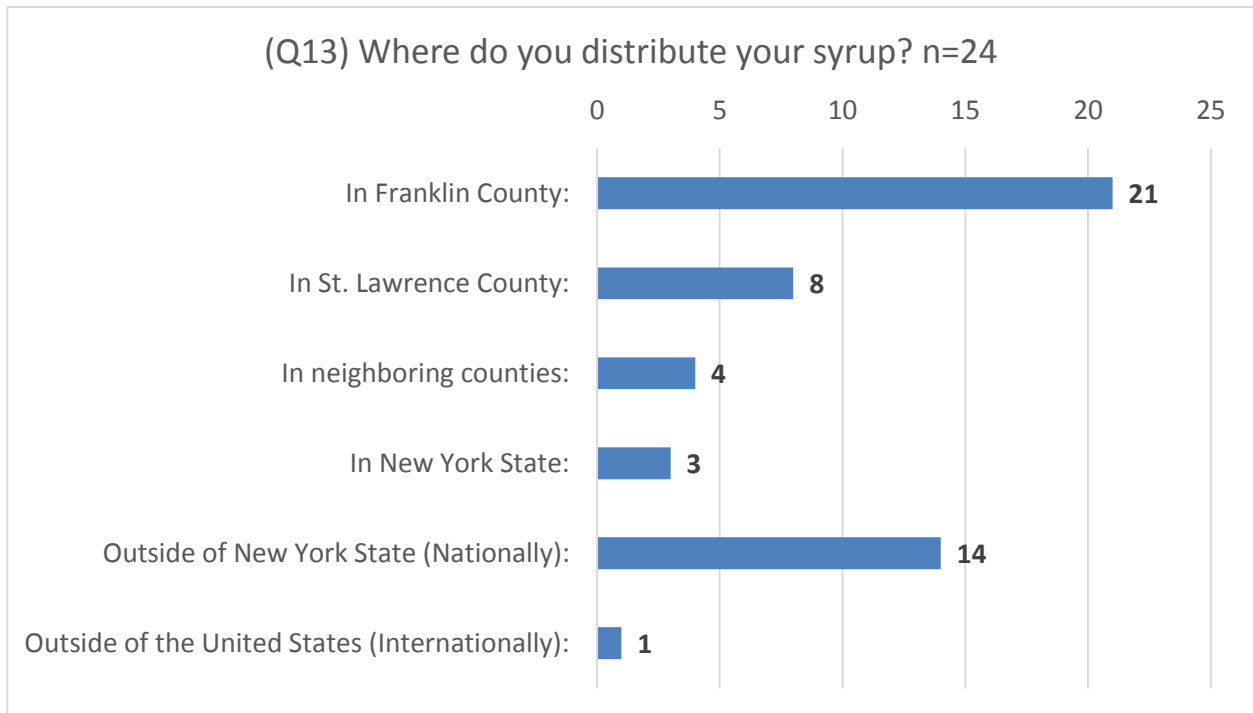


Once we addressed syrup storage, we examined respondents’ preference for advertising, marketing and distributing their products. This question was created to address the production processes used by local producers as well as to investigate what the F.C.M.A. does to improve the production process for local producers. Most respondents tend to use free services to distribute their maple syrup (22.) However, a few respondents chose to use paid services (3.) We concluded that there is little to no paid advertising for member’s products. The marketing techniques of the members surveyed are word of mouth and being a member of the association helps to promote their product as well.

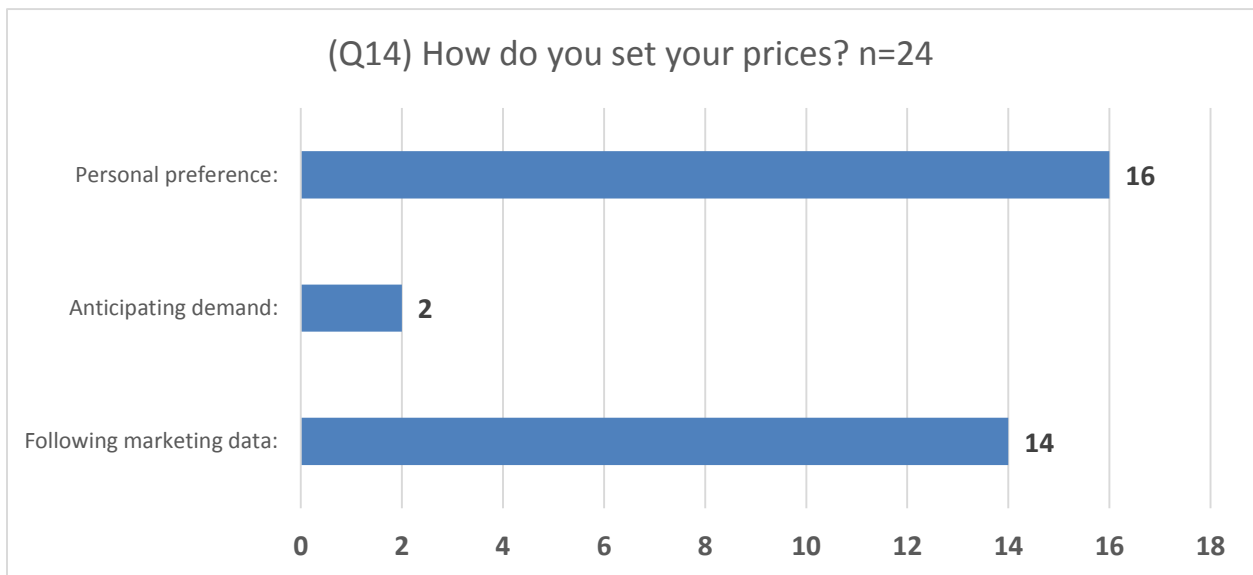


This question was created to address the production processes used by local producers to examine the economic impact of local maple syrup production, and ultimately to investigate what the F.C.M.A. does to improve the process for local producers. All producers sell their maple syrup in New York State (all 24 including Franklin, St. Lawrence and neighboring counties.) Only 1 producer distributes maple syrup internationally. Investigating this data shows that most sales happen within the county as well as in Vermont. The literature review states that 1% distribute out of state, where our research states that 60% of surveyed members distribute out of state.

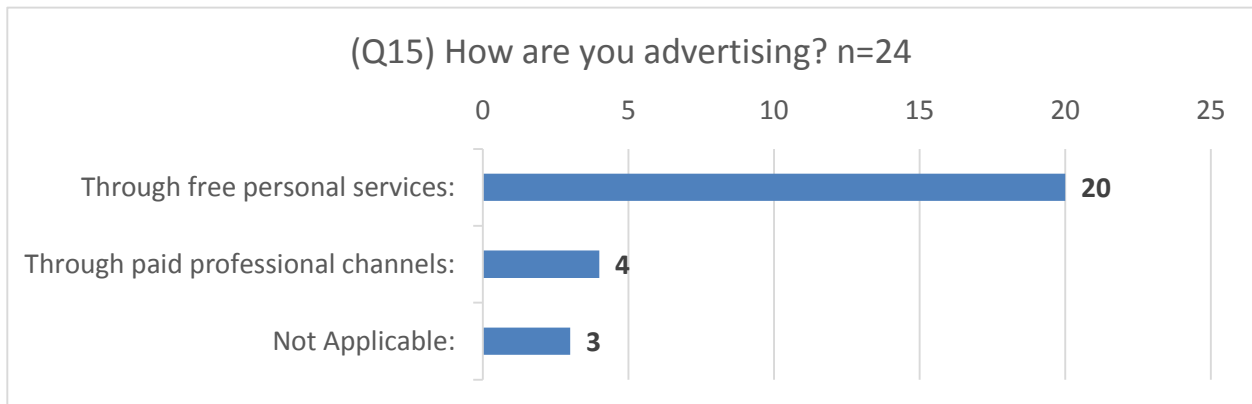




Producers set prices of their maple products using a combination of different methods. Based on our respondents, 16 members set their prices based on personal preference, while 14 set prices following marketing data and what the previous year’s market was.



We wanted to address how surveyed members are advertising and using current marketing strategies and sales approaches as well as to investigate what the F.C.M.A. can do to improve marketing and sales for local producers. Most respondents use free services (20.) Only 4 respondents chose to use paid services. Based on data collected, members are unwilling to pay for advertising services and just rely on returning customers, friends, and family.



We have found that there is a current rise in maple producers throughout the county. Surveyed members want to know what F.C.M.A can do to improve the production process for local producers and keep competition healthy. All producers believe the rise in producers is a good thing for local maple. However, 1 respondent chose to answer both “Yes” and “No” stating it is good until market saturation.



Finally we wanted to see if members were happy with the association and what the association was doing to promote and educate local producers within the county. We concluded with 100% response that members surveyed were happy with the association and things the association was doing to promote maple production. There was room for members surveyed to elaborate and two members said that there should be more classes and maple schools held at meetings that will educate members on up to date technologies and market prices and advertising opportunities.

## Conclusion

Our final objective is to provide useful research data to the F.C.M.A. to help supplement future decisions. Maple syrup producers rely on surveys, programs and academic research to keep up to date with the industry and new technology. Previous surveys on “Ohio Maple Days” workshops have indicated that producers are interested in implementing new technology that will increase both yield and quality of their maple syrup. Thorough research regarding procedures, industry practices and demographics is sparse. Academic research is vital for the maple products industry to continue advancement and development (Graham, 2005).

A majority of our research correlates with our literature review. For example, Graham’s larger study reported .7% of Ohio maple producers produce maple products as a primary source of income. Question 4 of our study shows none of our respondents produce maple as a primary source of income.

There is also conflicting data between our study and Graham’s study. Graham reported that 1% of Ohio producer’s sold out of state. Question 13 of our study reports 14 out of 24 respondents distribute out of state. This is a majority of our respondents.

We can conclude from our research that maple production in Franklin County, NY is an accepted way of life and a positive asset to the community. And 100% of the F.C.M.A members are satisfied with the work the association is doing to promote and support local maple production.

The culture and tradition of maple harvesting is a significant motivational factor for production. Question 6 examines why the F.C.M.A. members produce maple products. “Preserving tradition and history” plays a more significant role than “Providing extra income.”

Surprisingly, producing maple products as a hobby and to preserve the tradition and history of the process throughout the county was more motivational in respondent surveys than earning extra income. This concludes that the members value the tradition of the process and are not worried about having maple production as a primary means of income. No matter the data collected, it was obvious that members surveyed are 100 % in support of the growing market and the F.C.M.A. and its relations to local producers.

### References

Andrea Gordon Toronto, S. (2014, February 4). Maple syrup harvest gets makeover. */Toronto Star (Canada)/*.

Canfield, C(2013). US maple syrup production hits record high. */AP Regional State Report - Connecticut/*.

Canada, N. (2013, June 17). Maple syrup crop delivers both quantity and quality. */Canada Newswire/*.

Corbin, D. (2004). Keeping Time. *American Scholar* (Spring 2004 ed., Vol. 73, pp. 49-58). N.p.: Phi Beta Kappa Society.

Debellis, J. (2013). Tapping into the Sweetest Resource: Getting More Than Just Syrup From Sugar Maples. */Countryside & Small Stock Journal/*, /97/(2), 52.

Fruth, J (2009). Maple Sugaring At Home. Panoma, .(2009). N.p.: *North American Fruit Explorers*.

Graham, G. (2005). *Analysis of production practices and demographic characteristics of the Ohio maple syrup industry*. (Electronic Thesis or Dissertation). Retrieved from <https://etd.ohiolink.edu/>

Hopley, C. (2003). AMERICA'S Sweeteners Today. */World & I/*, /18/(3), 124.

Manguson, J. (1997). Sugaring time: a reflection on nature and sacrament. (making maple syrup) *The Christian Century* (March 1997 ed., Vol. 114, p. 292). N.p.: The Christian Century Foundation.

Melody, B. (2013). Vermont Finds High-Tech Ways To Sap More Money From Maple Trees.  
*/Morning Edition (NPR)/.*

*Multilayer bottle gives maple syrup new life: an oxygen-barrier layer increases shelf life to 400 days while enhancing the look of a premium product.* (2014, Feb 07). Retrieved from <http://bi.galegroup.com/essentials/article/GALE|A113185151/3d66eff8cf5247597be3f2ce58598512?u=canton>.

Quimby, B. (2013, July 21). Farmers offer peek behind barn doors.  
*/Portland Press Herald (ME)/.*

Romaker, J. (2014, January 12). Demand for Ohio's maple products is greater than state can produce. */Blade, The (OH)/.*

Thomas, M. M. (2005). Historic American Indian maple sugar and syrup production: boiling a arches in Michigan and Wisconsin. *Midcontinental Journal of Archaeology* (Fall 2005 ed., Vol. 30, p. 299). N.p.: Alta Mira Press. Retrieved February 9, 2014, from Academic OneFile.

## **Appendix A**

### **Interview Questions**

1. What is the purpose of the F.C.M.A.?
2. Why are you a member of the F.C.M.A.?
3. What are your concerns or problems with the F.C.M.A.?
4. What products do you specialize in?
5. What differentiates your product from your competitors?
6. What do you do with your products surplus?
7. How can the F.C.M.A. be improved?



## Appendix B

### Interview Results

John St.Mary

1. What is the purpose of F.C.M.A?

I am the founder if fema. I am a maple producer with my family and also at BMC, getting information or training on maple syrup we had to travel outside of the county. I started the association to raise awareness, educate the public, and help community members.

2. Why are you a member of F.C.M.A?

I am a leader of the membership, with contacts with Franklin County Soil and Water, and Cornell Cooperative Extension. I am also vice president of the Plattsburgh association. While teaching this to our youth, and having a maple operation with my family, I wanted the ability to be up-to-date on all the new technologies related to the maple industry. I then in turn could teach that to the membership and the youth.

3. What are your concerns or problems with the F.C.M.A.?

My problems are that some members do not have the loyalty to show up to meetings monthly. They want everything handed to them and want only what is in front of them. We started off strong and the producers that come regularly have sold out of product the last two years. Some members have made a lot of contacts, and sold a lot of product that they would not had if it hadn't been for the fcma. The last maple school we had, some members did not show up for the show, but want seminars put on at our meetings, it defeats the purpose of the maple school.

4. What products do you specialize in?

I specialize in maple popcorn, nuts ice cream, sugar on snow, candies, syrup, floats, snowcones, donuts, and pretty much all maple. At home we use traditional wood fired arch and no up to date RO's

5. What differentiates your products for your competitors?

At home we boil with wood, and the syrup has a natural smoke flavor as our ancestors did. At school we use an oil fired evaporator and I make a heavier syrup than most which gives a much better flavor, and is more enjoyable when eating.

6. What do you do with your surplus products?

We put most of our surplus in stainless steel drums and sell it whole sale. Although we have run out of syrup the last 3 years, we will bottle more syrup and sell it that way this year and try to make a little more money.

7. How can the F.C.M.A. be improved?

Members can get back into the motto of quality maple products. Members need to put more effort into meetings.

**Appendix B**  
**Interview Results**

Joy Hastings

1. What is the purpose of the F.C.M.A.?  
To promote FC maple producer and to instruct and produce a fine quality product.
2. Why are you a member of the F.C.M.A.?  
I am the secretary and treasure of the association and love making maple syrup. It is an important business for my family.
3. What are your concerns or problems with the association?  
Members personalities and managing expectations of members. There are also the growing pains of a new association.
4. What products do you specialize in?  
Maple confection. Candies, cream, suckers, nobake cookies, fudge, coffee creamer.
5. What differentiates your product from competitors?  
Availability of maple confections in the area.
6. What do you do with your surplus products?  
No surplus. Makes product all year long with orders. Needs to purchase bulk syrup. Made \$3800 during Christmas last year.
7. How can the F.C.M.A. be improved?  
Meet needs of the members more. Clarify state needs for maple products and producers.

**Appendix C  
Survey Instrument**

What is your gender?

- Male
- Female
- Not Applicable

What is your age?

What is your role in the Franklin County Maple Association? (Check all that apply.)

- Producer
- Administration
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Is maple syrup production your primary source of income?

- Yes
- No
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What is your annual household income this past year?

- \$25,000 or under
- \$26,000 to \$50,000
- \$51,000 to \$75,000
- \$76,000 to \$100,000
- \$101,000 to \$200,000
- \$201,000 or more
- Not Applicable

Why do you produce maple products? (Check all that apply.)

- To provide extra income
- To preserve the tradition and history
- As a hobby
- Other: \_\_\_\_\_  
\_\_\_\_\_

What is the background story of your sugaring operation? (Please elaborate.)

- It was passed down from family
- It was a self-startup
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How do you harvest? (Check all that apply.)

- Using traditional methods
- Using vacuum tubing
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What grade product do you prefer to produce and sell? (Check all that apply.)

- Grade A / Light Amber
- Grade A / Medium Amber
- Grade A / Dark Amber
- Grade B / Grade A Extra Dark
- Commercial Grade
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How do you feel about the new grading system? (Please elaborate.)

- Support it
- Oppose it
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How do you store your syrup? (Check all that apply.)

- Glass containers
- Metal containers
- Plastic containers
- Other: \_\_\_\_\_  
\_\_\_\_\_

How do you distribute your syrup? (Check all that apply.)

- Through free personal services
- Through paid professional services
- Other: \_\_\_\_\_

Where do you distribute your syrup? (Check all that apply.)

- In Franklin County
- In St. Lawrence County
- In neighboring counties
- In New York State
- Outside of New York State (Nationally)
- Outside of the United States (Internationally)
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How do you set your prices? (Please elaborate.)

- Following marketing data
- Anticipating demand
- Personal preference
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How are you advertising? (Check all that apply.)

- Through free personal services
- Through paid professional channels
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Do you think the rise in producers is good for local maple production? (Please elaborate.)

- Yes
- No
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Do you feel the F.C.M.A. has helped educate and promote local maple production? (Please elaborate.)

- Yes
- No
- Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_