Maple Syrup Digest

Vol. 62, No. 2 June 2023

Net-Zero Maple Syrup Season Reports

The Newsletter of the North American Maple Syrup Council

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NAMSC's Vision is for all sugarmakers to consistently and sustainably produce high quality maple products.

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President's Note

Greetings, maple world.

First of all, I would like to once again extend my congratulations to the NAMSC Hall of Fame. A small but very meaningful ceremony was held at the International Maple Museum in Crogan, NY in May.

For those of you who are efficient enough to have the maple season all behind you with wood cut and syrup sold and have moved on to summer things, I am envious! My wood pile is looking pretty good right now, but the rest will continue untill the first hole is drilled in 2024.

The market seems to be strong right now and deliveries to our usual venders are on a steady pace. Crop reports are all over the place this year, showing great variation even from town to town. I feel that we as maple producers are going to need to remain very flexible as to our start-up dates and throw tradition to the wind. We are very fortunate to have that flexibility.

At the writing of this column, most of the apples and pears in the Northeast have just suffered a near total loss to a late hard freeze after fruit set. This after the peaches were wiped out by a deep freeze in February. Maple producers at least can store our excess crop for years, if need be, to make up for a short year. I feel really badly for our fruit growers here in the Northeast this year.

If you had a short crop this year, consider purchasing some bulk syrup to bottle up and sell to your regular customers. You have worked very hard to establish your market share - there's no need to lose it just because you had a year of lower production. You can still make money at it too!

No matter what you are doing with your off season, please set aside some time in late October to come to Massachusetts for the annual international conference and meeting of the North American Maple Syrup Council. The event will feature sugarhouse tours, companion tours, a Taste of Massachusetts dinner, a large industry trade show, educational sessions for all sizes of producers, research updates, and time to meet and catch up with producers from all over the maple world!

And don't forget to bring some of your best product to compete in the international maple judging competition. I can tell you that those awards look really good displayed in the sugarhouse store! The "Best of show" prize was awarded to a very small producer from Massachusetts last year, showing that producers of all sizes have a chance at winning. Bring your best and show the world what you make! Comments will be given for each entry so you will know privately how your entries stacked up. Entering in these competitions over the years has made me a better producer for sure.

I wish you all a great summer and hope to see you in October.

Remember: "Make maple a staple"

Respectfully,

Howard Boyden
President, NAMSC

In this issue...

Cover: Pam Green and Simon Trépanier were inducted into the North American Maple Hall of Fame on May 12. Read more on pages 34-35.

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Net-Zero Maple Syrup

Paul Renaud

In the previous issue, the article *Effect of Climate Change on Maple Syrup Producers* summarized the short and long-term impacts of climate change on the maple syrup industry. The most imminent impact is the increased frequency and severity of wind and ice storms which can destroy the trees in your sugarbush. As it takes at least 40 years to replace a maple tree, every tree lost represents a significant loss of income until a replacement tree can be grown. And as the viable zone for sugar maple is moving northward at a rate of approximately 25 km per year, being able to grow replacement trees is increasingly uncertain. While the warmer climate impacts the ability to regrow sugar maples, it does not kill the existing mature trees which can continue to live on another 100 – 200 years. However, wind and ice storms can and even an annual loss of 3% mature trees due to storms eliminates over half of the established trees within 20 years.

The previous article also reviewed the mitigation measures that producers can take and several ways that producers can reduce their own emissions. As every challenge usually brings an opportunity, this article will focus on how producers can transition their own operations to a net-zero carbon footprint (or better) and be seen to be part of the solution instead of part of the problem.

There are three reasons why most maple syrup producers consider becoming carbon neutral:

1. They believe it is the right thing to do and they are tired of waiting for slow-moving politicians to take effective climate action. By taking the initiative to become carbon-neutral they feel that they can collectively make a difference, as even though the contribution from any given producer may seem small by comparison to the emissions in other industries, collectively even small changes add up to become a significant improvement. For example, if every maple tap in Canada were carbon neutral, the improvement will offset the emissions of a medium-sized city the size of Quebec City or Winnipeg.

2. They want lower costs and improve productivity. Even producers who are skeptical about climate change see the benefit of consuming less wood or oil because it lowers costs and saves labour. These improvements can be dramatic. For example, improving the heat management within your wood evaporator from 8% to 80% can reduce the wood consumed for boiling the same quantity of maple syrup from four bush cords to less than a face cord (I demonstrated this in my own operation). So, unless you like chopping wood, there are advantages to becoming carbon neutral. In fact, there is no trade-off between being carbon neutral and being more efficient. If you reduce your fuel consumption because of better heat management, you will reduce costs as well as reduce your emissions.

3. They want to re-position their maple syrup, so it appeals to an in-

creasingly sustainably minded consumer. Many people believe that "Carbon Neutral" is the next "Organic" in terms of impact on a large part of their client base. We have already seen beef consumers' buying patterns shift towards products such as "Beyond Meat" because many consumers perceive (rightly or wrongly) that it is more sustainable than traditional meat. Being carbon neutral (or better) also helps differentiates their product from other maple syrups, as well as from other sweeteners such as corn syrup, etc.

Whether you are righteous, lazy, or greedy, or any combination of the above, there are many good reasons to consider becoming carbon neutral. So how is this possible?

The first step is to examine and quantify your emissions. The Greenhouse Gas Protocol provides a good framework for doing this:

Scope 1 emissions are your direct emissions. For maple syrup producers, the major direct emissions are from:

- the combustion of fuel in your evaporator and your use of fossil fuels to manage your sugarbush (e.g. chainsaws, clearing saws, skidders/log loaders, tractors)
- the transport the sap from your bush to your sugar shack (ATV, Tractors)
- the transport of your syrup to market (stores, bulk buyers, etc)

Scope 2 emissions are your indirect emissions from using electricity:

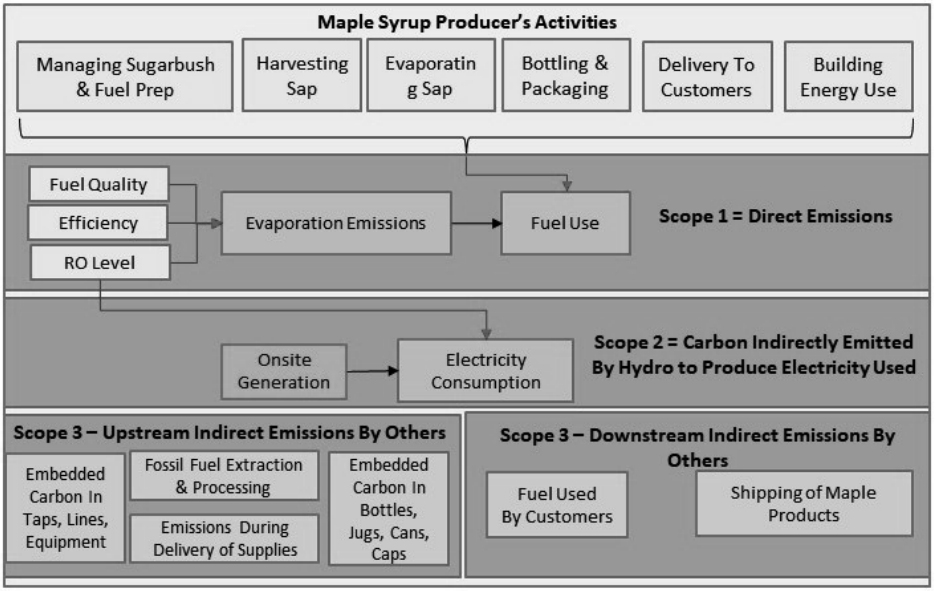
- Pumps, sap lifters, separators
- Reverse osmosis
- Lighting

Scope 3 upstream emissions are the indirect emissions embedded in the products that you use. While this can seem to be a long list (e.g., evaporator, taps, pipeline, bottles, etc.), you only need to focus on the consumables in your operation, because the carbon embedded in the use of major items such as evaporators and pumps is amortized over the many years of use that you will get from those products. For most producers, the amount of carbon embedded in small consumable items such as taps and tees is small compared to the carbon embedded in the bottles that they package their syrup in. The other major source for upstream indirect emissions is from the shipment of supplies to your farm.

Scope 3 downstream emissions are the indirect emissions associated with the sale of your maple syrup and maple products. For example, if you sell via farmgate sales your Scope 3 emissions include the gasoline consumed by your customers driving from their home to your farm gate. Although you may not know the milage driven by every customer, generally most producers know that they sell 80% of their products to customers from within a certain radius of their operation. You can use the average emissions from a car over that distance to figure out your scope 3 emissions.

These emissions are illustrated on the following page.

Once you have identified your emis-



sions, the next step is to see how you can reduce the major ones. For example, is it possible to establish a drop-off or distribution point closer to your repeat customers who otherwise would drive to your farmgate? Is it possible to use less fuel in your evaporator, optimize your use of shipping, etc.?

One of the easiest ways to reduce evaporator-related emissions is to use reverse osmosis (RO). Even using an RO to raise the Brix of your sap from 2 to 5 will reduce the amount you have to boil by 50%. Although an RO uses electricity, the indirect emissions from electricity are far lower than the direct emissions from burning fuel in your evaporator. For example, in Ontario electric power has a carbon footprint of only 25 g CO2e per Kwhr or 0.085 g / BTU as compared to 0.1 g/BTU of oil burned, or 0.087 -0 0.14 g/BTU when wood consumed (varies on the dryness of the wood). Although indirect power emissions vary by state/province (eg., Vermont in 2020 was 9 g CO2e/kwhr, compared to Quebec at 1.5 g/kwhr), electricity is always lower in emissions, even if you live in an area such as Nova Scotia where most power is generated from fossil fuels (670 g CO2e / kwhr).

It is important to appreciate that although wood is a biofuel (i.e., the emissions from burning wood were produced from carbon already in the atmosphere that was photosynthesized by the trees that contributed the wood that was burned) and does not contribute long-term to climate change, it is carbon neutral only over the 100+ year lifecycle of a tree. However, on an annual basis, the emissions from burning wood are just as impactful as the emissions from burning a fossil fuel in your evaporator – and we do not have 100 years to mitigate climate change.

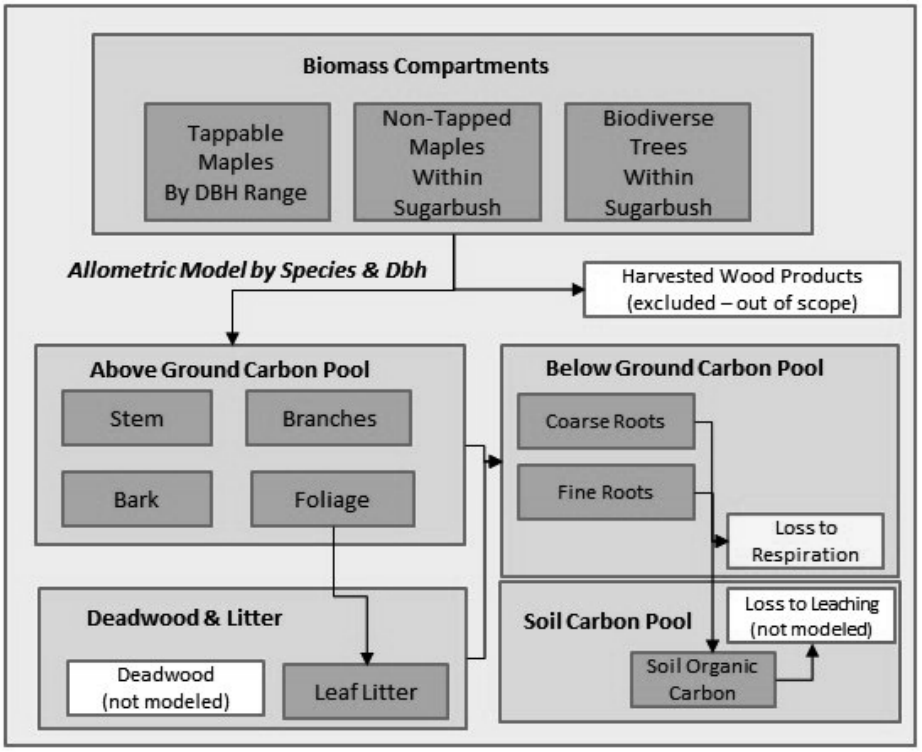
Knowing your emissions is only the half of the net-zero equation. The other

half comes from understanding the sequestration of trees in your sugarbush. Your trees are incredibly effective in removing carbon dioxide from the atmosphere (via photosynthesis) and converting it to carbon as they grow. A maple tree is approximately 50% carbon and a 10-inch DBH tree (the minimum size that is tapped) has already sequestered a metric tonne of CO2 (1,000 kg) to reach that size. As your trees are growing each year, they are sequestering CO2 each year and it turns out that every 100 tappable trees sequester a metric tonne of CO2 per year.

Trees also contribute to carbon in the soil when they shed their leaves that ultimately decompose on the ground (not all the carbon in the leaf litter decomposes into soil, some of it goes back to the atmosphere due to the respiration from the microbes that decompose the organic matter from the leaves).

As most sugarbushes are bio-diverse, non-maples also contribute to the sequestration of CO2 as do the smaller maple trees that are not yet ready to be tapped. The full scope of sequestration is illustrated below.

In the illustration below, we show the harvesting of saw lumber as out-of-scope because we are focusing solely on maple syrup related activities. If you also have a woodlot that produces saw timber, you might include or exclude it depending on whether you just want to know the carbon footprint of your maple syrup business or of your entire farm. We also exclude the carbon



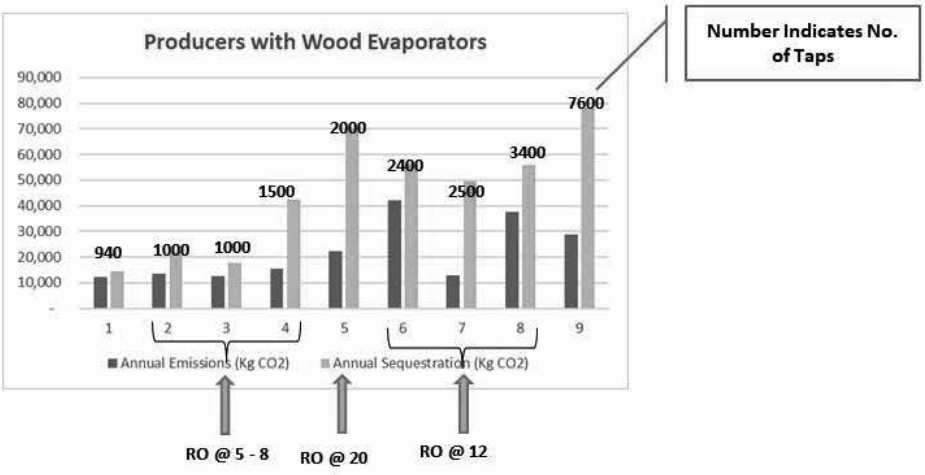
Carbon Footprint High Level Readout			Relevé de haut niveau de l'empreinte carbone
Total Trees	2,666		Totale des arbes
Total Taps	1,335		Entailles totale
Expected Syrup Yield per Tap	2.22	L	Montant de sirop anticipée par entaille
Total Syrup	2,967	L	Totale de sirop
Overall Carbon Budget	24,395	kg CO2/yr	Bilan de carbone
Evaporator Emissions	9,454		Émissions d'évaporateur
Other Scope 1 Emissions	945		Autres émissions de portée 1
Scope 2 Emissions	80		Émissions de portée 2
Scope 3 Packaging	401		Portée 3 émissions d'emballage
Scope 3 Customer	2,095		Portée 3 émissions des clients
Lifecycle Fuel Emissions	1,970		Émissions du cycle de vie du combustible
Other Scope 3 Allocation	200		Autres émissions de portée 3
Total Emissions Estimate	15,146	kg CO2/yr	Totale d'émissions
Excess Sequestration	9	T CO2/yr	Marge de manœuvre dans le bilan carbone
Per Tree	3.47	kg CO2/yr	Par Arbre
Per Tap	6.93	kg CO2/yr	Par Entaille
Per L Syrup	3.12	kg CO2/yr	Par L de Sirop

accumulating in deadwood because in an actively managed sugarbush, the effect of tree mortality is small because the sugarbush is being managed to promote growth. We also exclude leaching of carbon via groundwater as it is relatively minor in most sugarbushes.

Above is a typical carbon footprint analysis from a 1300-tap maple syrup producer. As you can see, not all emissions are equal, and the evaporator usually dominates all other emissions. This producer relied heavily on farmgate sales, so Scope 3 fuel emissions from his customers were significant. Nonetheless, this producer is better than carbon neutral as his emissions do not exceed the annual carbon budget established by the sequestration in his sugarbush.

While it may seem daunting to do all these calculations, it is possible to do so and there are a variety of sources available online to help you along. Increasingly, sustainability advisory firms such as The Lanigan Group have off-the-shelf models to facilitate these calculations.

On the following page are some results from other producers using wood



evaporators who were better than carbon neutral that were modeled recently by the Lanigan Group. As you can see, the carbon footprint of producers varies based on their level of efficiency and extent of RO target level. The larger the maple syrup operation, the more efficient the producer needs to become to control costs. This efficiency is also evident when you look at the difference between the amounts sequestered vs emitted as the scale of the producer increases (i.e. the amount by which the light bar exceeds the darker bar).

So, the good news is that it is very possible for maple syrup producers to become provably carbon neutral if they choose to do so. Several maple syrup associations are starting to investigate proving that their entire sector is carbon neutral. Because we do not destroy our trees when we harvest our product, maple syrup has the potential to become the world's first carbon neutral agricultural product and all the bragging rights that come with that prize.

The Next Maple Marketing Campaign

Mark Cannella, University of Vermont

Over two-thirds of consumers say that living a more sustainable lifestyle is important to them. Eco-friendly and Fair Trade claims are attractive to consumers, but the marketplace is still trying to clarify what lies behind these claims and if shoppers really follow through with their interests in the form of purchases. Consumer sentiment research looked at retail sales from 2017-2020 and showed that consumer spending on products with environmental, social and governance (ESG) claims grew at a faster rate than products without such claims (Am et al., 2023).

The authors acknowledge that this NielsenIQ-McKenzie study couldn't verify the accuracy of product claims, offering the reminder of the struggle to discern potential greenwashing, making false environmental claims, in the absence of third party standards. The term sustainability has been subject to critique or confusion for decades, due in part to diverse stakeholders that assign certain values or negative penalties to various features of a food product. Sustainability concepts like socially just, ecologically sound or differentiated from corporate agri-business are measured or perceived differently by different people with different interests (Kloppenburg et al. 2000).

More than half of U.S. consumers are intentionally buying from companies that adhere to ESG practices. Organic was one of the earliest eco-labels to formally communicate sustainability to consumers. Early state-based programs in the 1970's manifested in the establishment of the National Organic Program in 1990. It took over a decade to finalize national organic standards in 2002. At present there are more than 200 eco-labels and certifications is use in the food industry. Experts wonder at what point consumers will be too confused by the options.

Climate impact and carbon reductions remain high on the list of product features that consumers seek. The global food system is estimated to contribute up to 30% of total greenhouse gas emissions (Kim and Neff, 2009). Recent efforts by the United Nations Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC) show how global climate targets have begun to incorporate food systems through both production systems and consumption patterns. Just Salads is an example of a company that includes carbon footprint labelling on each product (https://justsalad.com/carbonlabel).

Maple forests and syrup currently benefit from claims of storing carbon but no standardized carbon verification program has emerged on major brands to date. The situation is not helped by the confusion of carbon markets and credits. There are a number of methodologies and companies seeking to measure and claim these

credits. Another complicating factor for maple sellers will relate to who "owns" the claim. It is generally assumed that once a carbon credit is sold or leased by the maple forest owner, that owner loses the ability to promote a carbon claim on their products. The credit custody then shifts to the buyer. Perhaps a solution for maple syrup will be a future aggregator of forest carbon where the actual maple producers retain an ownership stake in the business entity.

Studies show that consumers may place different emphasis on ESG features embodied in a multi-attribute food product. Research on honey found that "origin" and locality may be more important than "fair trade" claims. A further look at clusters of consumers, however, shifts the analysis by indicating that shoppers in different age groups may find different features more important. Fair trade consumers tended to be in the 31-50 year range and have higher levels of university education while the "local" consumers tend to be more than 50 years old (Sama et al., 2018).

Imagery of small family businesses and maple tradition is pervasive in maple producing regions. There is an undeniable cultural flavor to maple. It is yet to be seen how maple companies will relate to consumers in far off regions that don't identify with New England and northern U.S. forest community imagery. What social message will resonate to distant markets?

Pure maple syrup can be promoted with a number of product features. De-Magistris and Gracia (2016)

looked at locally grown almonds in Spain to investigate the interaction between features like organic production, origin of production (distance to consumer) and price. Results found consumers are willing to pay more for products with an organic label, and this price premium for organic is larger than any premium they would pay for a short-distance/more locally produced product. This study serves as a reminder that the geographic audience for the next maple marketing campaign matters. Maple sellers seeking to expand markets in non-production regions are likely find value emphasizing environmental features, potentially more value than a state origin claim. Maple market research showed that brand recognition of Vermont maple products declined sharply for consumers out of state and continued to decline as the distance increased (Atlantic, 2021).

Health conscious consumers are driving a growth trend for natural sweeteners. Higher micro-nutrient concentrations set maple syrup samples apart from other sweeteners in the laboratory. Maple syrup, however, is not the only industry seeking to capture this market (Eggleston et al., 2021). Demand trends toward less refined and "healthier sugars" have already resulted in dramatic growth to sucrose dominant refined white and brown sugars compared to highly processed and artificial sweeteners. The contribution of minerals, vitamins and antioxidants can add value for consumers. Turbinado style or "raw cane sugar" is an example of alternative processing that has reached

mass markets. Even less refined and non-centrifuged brown sugars with higher nutritive properties have been consumed for centuries for food and medicinal purposes. These cane sugars are gaining attention in European and North American regions (Segui et al., 2015). A counter-debate voiced within the maple industry points out that if consumers are seeking to indulge and enjoy a special high quality treat, they could become distrustful of "health claims" on syrup.

What else can we expect to see in consumer demand trends? There are numerous themes across the broader food industry that may or may not rise to importance for maple, such as flavor, culinary experiences, plastic free packaging, and others. We can hand it off to the marketing professionals for guidance.

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Maple Syrup Grading School to be Offered in Massachusetts

The *International Maple Syrup Grading School* is for maple producers, bulk syrup buyers, state inspectors, and others needing to accurately grade maple syrup or judge maple product entries at fairs and contests. Quality control issues are also addressed. This school provides a strong scientific base combined with intensive hands-on exercises. This approach enables participants to learn how to grade or judge maple products with confidence. Past course participants have shared that the class offers, "Excellent explanations, exercises and interaction. Far better than reading available material only."

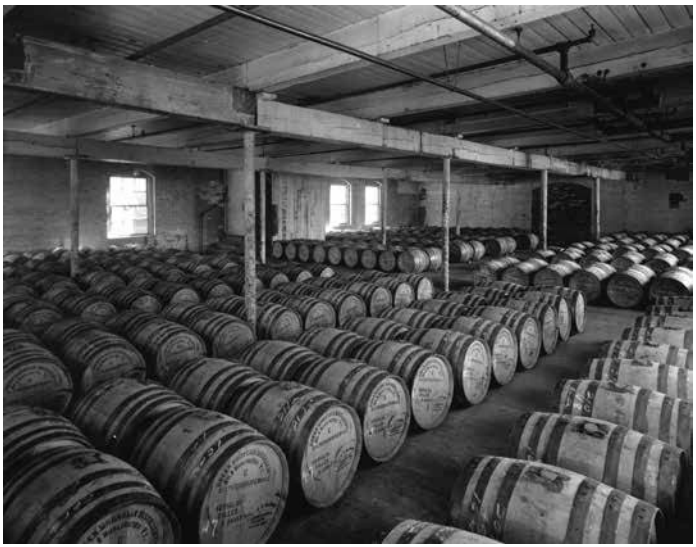
This year's program is scheduled to take place immediately after the NAMSC Annual Meeting on October 29th and 30th in Grafton, MA. Sign up for the Grading School interest list to be the first to learn when registration opens. https://extension.umaine.edu/maple-grading-school/2023-schools/

Green Mountain Distillery: Maple Syrup Liquor and the End of Prohibition

Matthew M. Thomas

The rapid growth of the wine, beer, and spirits industry has witnessed the introduction of a host of new micro-distilleries across the maple syrup producing region. Even more exciting, some new distilleries are making spirits flavored by or created from pure maple syrup with original names like *Acerum* and *Miskey*. As popular as craft spirits are today, it took many states decades to bring back local distilleries following the end of prohibition. In Vermont for example, the modern distilling industry began in the 1970s and 1980s. What is less well known is that immediately following the end of prohibition, there was an earlier era of making distilled spirits in Vermont using maple syrup as its base ingredient.

In September 1933, Vermont voted by a 2 to 1 margin to repeal the 18th amendment making it the 25th state to support the end of prohibition. Vermont passed its first liquor control bill in April 1934, establishing a liquor control board and regulating the importation, movement, and sale of alcohol within the state. The idea that liquor may be manufactured within the state saw little discussion until the following February, when the law was amended to allow the newly established state liquor control board to issue licenses for manufacturing in the state. A few weeks later Green Mountain Distillery was informally assembled in Burlington, Vermont before formally submitting papers of incorporation May 15, 1935.



Oak barrels filled with maple liquor aging in the warehouse of Green Mountain Distillery, circa 1936. *University of Vermont Special Collections.*

The leadership of the new distilling concern were William Knox as President, Charles P. McDonald of United Maple Products, LTD as Vice President, and Frank H. Mahoney, an experienced distiller from Mas-

sachusetts as second Vice President and general manager. Mahoney had been the distiller at the New England Distillery in Clinton, Massachusetts before prohibition, and worked at a rum distillery in the Virgin Islands during prohibition. Raymond Controis, later to become the Treasurer of the City of Burlington was hired as clerk before becoming company secretary and manager. The remaining board of directors comprised prominent Burlington area bankers, financial managers, and an investor from New York City.

Besides being the first distillery in Vermont in over 60 years, what made Green Mountain Distillery unique was that they fermented pure maple syrup, rather than cane sugar, grains, or potatoes, in making their alcohol. This was the first large-scale commercial manufacture of distilled spirits based on maple syrup or sugar. The newly formed Federal Alcohol Control Administration realized that this maple-based product did not fit into the exiting categories of spirits, which at the time was limited to gin, rum, brandy, and whiskey. As a result, a new classification called maple liquor was added.

At first the distillery announced that they were going to operate under the Colonial Liquor brand, with plans in the first year to make 100,000 gallons of liquor from 200,000 to 300,000 pounds of syrup, before growing to 1,000,000 gallons of liquor by their second and third years. Not surprisingly, production at those levels did not happen, and the Colonial Liquor name was never put into use. Green Mountain's liquor was made from pure grade C or commercial grade maple syrup, water from a local artesian well, and a fermentation agent. Fermentation took six days in one of six metal tanks before being transferred to charred oak barrels for at least six months of aging. Although the manufacturing process was described as similar to rum, and some even took to calling it maple rum, the maple liquor reportedly tasted more like an aged brandy.

In the first two years of operation, Green Mountain Distillery made two products. Five Leaf Brand Green Mountain Maple Liquor was a 90-proof liquor distilled from pure maple syrup with no other added sugars, that was to be used or consumed in the same manner as whiskey such as rye, bourbon, or scotch. The other product was a 60-proof liqueur called "Amerind" made from their distilled maple syrup liquor, combine with water, a small amount of gin, and flavored with pure maple syrup in a secret formula. The name "Amerind" was a contraction of American and Indian, a named reportedly chosen to "honor" of the first makers of maple syrup. One of their very first ads declared "Amerind Liqueur as American as the Indian." The recipe for Green Mountain's unique maple liqueur was developed by company president Knox and header distiller Mahoney after two years of experimentation.

Promoters within the state, including the state Farm Bureau, emphasized the timeliness and importance of a new outlet for maple syrup and sugar at a time when the tobacco industry, normally a heavy user of maple sugar, was scaling back and looking for other cheaper sweeteners. Other promotional

Brand new distilling room at Green Mountain Distillery in Burlington, Vermont in 1936. *University of Vermont Special Collections.*

angles were a little more nationalistic in flavor and attempted to capitalize on the novelty of the product as a new American spirit and the first new liquor in over a century, as well as the idea that maple liquor made from pure maple syrup produced from Vermont sugarbushes would be a truly homegrown product and invention.

Another early promotion, carried out with the Vermont Society of New York in March 1937, held a cocktail contest and reception at the swanky Commodore Hotel in New York City. The city's best barmen were asked to present a signature cocktail using Green Mountain's Amerind Liqueur or Five Leaf Maple Liquor with three winning recipes chosen.

Green Mountain Distillery occupied the five-story brick Crystal Confectionary Company building and an adjacent brick house at 95 to 99 College Street in Burlington. Actual manufacturing of spirits began on August 7, 1936, with 800 gallons produced and put in barrels in their storage room. Sales of their products officially began on February 1, 1937, across New England, as well as in New York, Chicago, Washington DC, and the west coast states. The distillery had plans to produce 1,800 gallons a day and fill their bonded warehouse with 3,500 barrels but they never quite produced the volume they were hoping for.

In their first couple of years, sales were weak, especially in comparison to production and marketing costs, and the distillery continually ran at a deficit as directors unsuccessfully attempted to take out loans for operating costs against the value of their warehoused inventory. Looking for ways to grow their sales, in the summer of 1938, the distillery expanded its product line, moving beyond maple-based spirits to add Champlain Club London Dry Distilled Gin, Morgan Pacer Straight Rye Whiskey, and Royal Morgan Bourbon Whiskey, all made from grain and not maple sugar.

The company was never very successful, and their maple liquor and liqueur never really found a following. In 1942, Green Mountain Distillery ceased operation and its facilities were leased to a new group of men from Maine and Massachusetts with experience in the making of industrial spirits. They formed the Lawrence Distilling Company and, with the onset of World War Two, obtained a defense contract from the federal government to rectify industrial alcohols for use in the manufacture of synthetic rubber. With the change in focus, Lawrence Distilling discontinued making spirits based on fermented maple syrup and focused exclusively on making grain-based spirits.

Following the end of the war, in late 1945, the Lawrence Distilling Company attempted to get back into the consumable spirits business with the making of rye whiskey and scotch whiskey, but it never took off and when their lease ended and was not renewed, the com-

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pany stopped production in 1947. The building was purchased and became the home to Lanou and Son Plumbing and Heating Company.

Despite their lack of success, Green Mountain's products were reportedly popular. A Former Vermont State Senator once commented that he "was never without maple liqueur while in Montpelier," home to the Vermont State Capitol. The Senator added that "I never stood up to speak on the floor of the Vermont Senate unless I'd had a draft of that liqueur. It softened the throat. Wasn't intoxicating you know, sixty proof." Raymond Controis commented years later that one of the main reasons he thinks Green Mountain Distillery products were not more successful is that it was not aged long enough and that it was too expensive in comparison to other liquors, due to the higher cost of the maple ingredients.

Despite its short life span, Green Mountain Distillery and its maple liquor was a novel and little recognized chapter in the post-prohibition story of manufacturing spirits in America that used maple syrup to help open the door for the current craft spirits movement.

Special thanks to the University of Vermont Special Collections for their assistance with this research and to the Chittenden County Historical Society for sharing Lillian Baker Carlise's research and earlier article on Green Mountain Distillery. Dr. Matthew M. Thomas is a maple industry historian. You can view more of his writings at his website www.maplesyruphistory.com.

USDA-funded maple research project seeks producers as collaborators

Life cycle carbon footprint analysis and improvement strategies for US maple syrup production

The University of Michigan Center for Sustainable Systems began this USDA ACER research project in the fall of 2022. The goals of this project are to support producers as they seek to improve energy efficiency and reduce emissions associated with producing maple syrup. While most producers strive to be as efficient as possible to keep their costs low, knowledge is limited on which production practices have the greatest impact on greenhouse gas emissions (GHGs). This project will develop a web-based calculator based on real-world process data that producers can use to estimate their own energy and GHG emissions per gallon of syrup produced, as well as providing recommendations on how they can reduce these impacts.

To assist us in building this calculator, **we are seeking producers who are interested in joining our current group of research collaborators by providing data on their sugaring operations over the next two seasons (spring 2024 and 2025)**. The calculator will be directly based on the data shared with us by producers, and while your data won't be provided to us anonymously, we will not be sharing or publishing your operational data with anyone. We are looking for producers of all sizes, locations, and production practices (including sap collection method, whether vacuum and RO are used, evaporator fuel type and efficiency features, etc.). In addition to data on processing sap into syrup, including pre-season prep and post-season clean-up, we are interested in your off-season sugarbush activities (road and sap collection infrastructure maintenance, brush clearing, liming/fertilizing, etc.). These data will be assembled into a life-cycle inventory of syrup production that will be the heart of the calculator, and will also allow us to provide feedback on other impacts, such as water use and waste generated. We are planning to provide each participating producer with their own life cycle inventory results based on the data they provide on their operations, as well as a printable certificate identifying the producer as a research collaborator and provider of data for each season they share data.

Since the start of the project, we've constructed a life cycle inventory model that contains emissions and energy data on fuel processing and combustion, as well as on vehicle and equipment production and operation. This model will be used to process the data that producers share with us on their maple operations. We enrolled 23 producers as research collaborators for the 2023 season who are sharing data on their operations with us. Of those 23, seven were small (<1,000 taps), ten were medium (1,000 – 10,000 taps), and six were large (>10,000 taps). Geographically, nine are in NY, four in MI, two in VT, WV, and ON, with one each in WI, MN, IL, and KY. We are also currently characterizing the distribution network

for maple syrup and compiling candidate strategies for reducing impact from syrup production.

To help producers who are interested in a more complete carbon accounting of their operations, we are also exploring the carbon storage and sequestration potential in maple forests, and how producers' forest management practices might provide opportunities to increase this potential. This aspect of the project will be based on academic and government agency literature and not on producer data.

We will be holding several online sessions in June to discuss the data collection process with interested producers and processors and to answer your questions about the project. These sessions will be scheduled on several dates at different times to provide more options to attend. Producers or processors who attend one of these sessions and then provide data on their operations will be entered into a drawing for a cash prize for each year they provide data. If you'd like to hear more about participating in this project, please send an email to Geoff Lewis at glewis@umich,edu with the subject line **Maple syrup research** and please include your preferred days of the week and times for information sessions. We're looking forward to working with you on this project!

Maple Trees and Spotted Lanternfly

Elizabeth Barnes, Forest Pest Outreach Coordinator, Massachusetts Department of Agricultural Resources

Spotted lanternfly (SLF) is an invasive insect with more than 100 host plants. It feeds by using its straw-like mouthparts to drink sap from the plants it attacks. If there are only a few lanternflies on a plant, they are unlikely to do much damage. However, when there are tens or hundreds on a single plant, more serious damage can occur.

With maples as one of the known host plants of SLF, there has been concern among University Extension specialists as well as the maple sugaring industry about the possible impact of this pest. A new study by Pennsylvania State University investigated this risk in hardwood plants, including red and silver maple trees. The study found that, in some cases, SLF feeding reduced the growth of silver maples and changed the sugar concentration in red and silver maples. These results point to potential health impacts for maples, but much more work needs to be done to fully understand the impact of SLF. Some of the specifics of what the researchers found:

- The experiment tested red and silver maples, black walnut, and tree of heaven.
- The higher the density of SLF 4th instar nymphs (right before they change into adults) on silver maples, the less the trees grew in diameter. Further studies will be needed to understand the mechanism behind this impact.
- SLF feeding altered the sugar concentration in maples, but the direction and degree of this change differed based on the time of year, and impacted each maple species differently.
- The experiments were done on young trees, so the impact of SLF feeding on maple syrup production is still unknown.

This research is still in very early stages and therefore there are currently no specific management recommendations for maple sugar producers. General precautions include:

- Keeping track of SLF updates.
- Considering using sticky bands or circle traps in areas with heavy SLF outbreaks.
- Scraping egg masses.

USDA Assistance for US Maple Producers

USDA offers a myriad of programs and services to help US maple syrup producers conserve natural resources and implement activities to help solve resource concerns, all while improving their operations. For example, USDA's Natural Resource Conservation Service (NRCS) offers both technical and financial assistance to maple syrup producers to implement conservation practices and activities that benefit both the operation and the environment. For example, you can hire a Technical Service Provider (TSP) to develop Energy Management Plans to identify areas of an operation that could become more efficient in cost of operation and time, and Forest Management Plans that inventory and provide solutions to addressing resource concerns to create a healthier forest.

To help offset costs of implementing the Energy Management Plan, NRCS's Environmental Quality Incentives Program (EQIP) provides payment incentives for items identified in the Energy Management Plan such as energy efficient hot water heaters, reverse osmosis machines, oil-fired evaporators, wood- fired evaporators, and preheaters. Additionally, through EQIP, NRCS can provide incentive payments for activities identified in the Forest Management Plan in eligible woodlots. Some of the activities include forest stand improvement, help with thinning, creating openings for wildlife, establishing pollinator habitat plantings, and planting trees. Brush management and herbaceous weed control practices are also available to assist with invasive species and undesirable plant management and to promote a healthy ecosystem.

NRCS's Conservation Stewardship Program (CSP) helps to build on existing conservation systems and adopt additional conservation practices and activities to enhance and maintain eligible woodlots. CSP is a common farmland program, but is available in a forestry setting as well. One enhancement available through CSP is sugarbush management where landowners receive annual payments for creating a more diverse and resilient forest by planting additional tree and bush species. This enhancement removes the risks associated with monoculture forests. Numerous other enhancements including planting wildflowers for pollinator habitat, creating biochar from woody residue after a woodlot thinning, planting riparian buffers, and implementing wildlife conservation activities, to name a few, are available for your operation through CSP.

NRCS can also help organic producers to improve their operations, and can help producers transition to organic using a conservation plan tailored to their needs.

USDA's Farm Service Agency (FSA) offers programs for syrup producers such as Farm Storage Facility Loans (FSFL) that offer low-interest financing to go toward building or upgrading storage facilities. Both

maple sap and maple syrup are eligible for this financing opportunity that can be utilized for storage tanks, hauling trucks and storage space. Loan amounts range from $50,000 to $500,000 under this program. FSA and Risk Management Agency (RMA) also offer coverage to help protect against natural disasters with programs such as Federal Crop Insurance and Whole-Farm Revenue Protection and the Tree Assistance Program to replant or rehabilitate trees due to natural disasters where eligible.

Contact your local USDA Service Center for additional information. To find your local office, please go to www.farmers.gov/service-locator.

The Impact of Financial Markets on Maple Producers

Mark Cannella, University of Vermont

Currency Exchange Rates

Quebec's large amount of syrup imports into the U.S, the syrup pricing formula announced by the Quebec Maple Producers Association (PPAQ) and exchange rates combine as key indicators for maple markets. During April 2023 $1 USD converted to an average of ~$1.35 CAD. This reflects a strengthening of U.S. dollars compared to the Spring-Summer 2022 that averaged $1 USD to $1.28 CAD. Exchange rates between these two countries can be volatile and difficult to predict. A few key factors, however, are known to influence the rates. An interest rate differential between U.S. and Canadian central banks is one factor. Intervention by the U.S. Federal Reserve to strengthen the U.S. dollar can increase the USD-CAD exchange rate. Conversely, the Canadian economy is largely influenced by large exports of natural resource commodities like oil. An increase in global oil prices can help to strengthen the Canadian dollar or "loonie" which in turn results in a reduction of the USD to CAD exchange rate. The interaction of commodity markets and socio-political events can make it difficult to predict the timing and magnitude of significant exchange rate adjustments.

Interest Rates

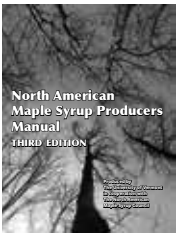
The cost of renting money continues to rise. In early May the Federal Reserve raised the federal funds rate 25 basis points. The updated target range for federal funds is now 5 – 5.25 %. The "Prime Rate" is a helpful indicator to monitor trends in borrowing costs. The prime rate is the lowest rate that banks can lend money to customers. It reflects the floor on interest rates, meaning it is closest to the rates paid by the best (lowest risk) customers. Higher interest rates can be expected for certain loan products and for less-than-the-best customers. With the latest Fed rate hike, early May Prime rates hover near 8-8.25%.

Maple business owners will experience an increase in costs for their existing adjustable rate loans. Adjustable rate loans can have different ad-

justment periods. Borrowers should check to know when their adjustment period is. That adjustment period will catch recent interest rate increases and the minimum monthly payment can increase. Short term borrowing and line-of-credit type products for buying syrup inventories and covering seasonal production costs will now increase. Intermediate term (5-15 year) loans on equipment, improvements and land purchases will experience increasing rates as the new federal borrowing rate moves through the banking system. Interest rate increases are expected tamp down inflation for other products and services. Unfortunately, this transition period is likely to double-whack maple producers, sellers and distributors with higher costs for capital and higher operating expenses.

Order the 3rd edition of the North American Maple Syrup Producers Manual at:

www.mapleresearch.org/ordermanual



The NY Mid-Winter Maple Classic Returns January 5-6, 2024

The NYS Maple Producers' Association is pleased to announce that the popular Mid-Winter Maple Classic conference will return in January 2024. The Syracuse Oncenter Convention Center is the new location for the conference, which combines a vendor trade show and a forum of workshops for maple producers. The conference will open at 5pm Friday January 5 and again Saturday January 6 at 8am. This year's theme of "What's Flowing Down the Maple Pipeline?" will focus on the newest techniques and innovations, giving attendees tools to produce high quality maple syrup efficiently and sustainably.

The conference is being organized by a committee of association members who are themselves maple producers, including Lyle Merle, Karl Wiles, Doug Thompson, Tom Kaufman, Dan Weed, Kristina Ferrare, Helen Thomas. The committee is chaired by Michael Grottoli of Grottoli's Maple, Middle Granville, NY. Educational workshops are being organized by the Cornell University Maple Program co-directors, Aaron Wightman and Adam Wild. The Oncenter Convention Center provides a state-of-the-art facility with classrooms, banquet hall, trade show floor and gathering places for meals and conversation, all together in one building.

For now, SAVE the DATES, January 5-6, 2024. We will be releasing details about registration, hotels, and the schedule of the activities on the website https://nysmaple.com/mapleclassic at the start of July 2024.

2023 Maple Hall of Fame Inductee
Simon Trépanier

Originally from Montreal, Canada and having been trained in forest engineering at Laval University in Quebec City, Simon Trépanier refined his training with internships in California and Germany before completing a full year of schooling at the University of British Columbia in Canada, in forestry. Subsequently, he worked in private forests as a forest advisor in the Eastern Townships region of Quebec province with forest lot owners. In 1997, he plunged into the maple sector by becoming a maple syrup advisor for a group of 50 maple syrup producers in Lac-Mégantic. It was at this time that Simon took a liking to maple and became passionate about this natural sugar and the people who produce it. This work allows him to meet dozens of maple syrup producers to help them with the quality and quantity of maple syrup they produce annually. This mandate led him to take an interest in the marketing of maple products and subsequently, 10 years later, he became Executive Director of the Fédération des producteurs acéricoles du Québec, an association of more than 8,000 maple farms. In addition to managing the marketing of the association's members' bulk production, this profession also led him to represent Quebec on numerous international round tables, including the Canadian Maple Advisory Committee and the International Maple Syrup Institute, where he acted as a director for 10 years. His qualities as a popularizer, diplomat and unifier helped to strengthen the bonds of the maple community in North America and to radiate the magic of maple products.

Simon was instrumental in greatly improving the understanding and awareness of the Maple syrup strategic reserve for the entire maple industry, in both Canada and the United States. His openess and strong listening skills helped bridge the robust commercial packing industry that the maple industry enjoys today.

2023 Maple Hall of Fame Inductee
Pam Green

My husband Rich comes from a maple sugaring family. He's one of the best sugarmakers I know and I have learned so much from him. Early in our marriage we built a small sugarhouse, as big as we could afford. Our arch was too big for it and old with three pans, one a hinged syrup pan. We left half of it hanging out the back of the building, using just two pans. All of a sudden, we were really sugaring. I quickly learned how to boil and was immediately smitten. From then on, maple became a part of my life and eventually my way of life.

We now own and continue to sugar on land that, according to old diaries, his mother's family was tapping back in the late 1700's. Through the years, Rich and I expanded our operation, at one time gathering 2,200 buckets. We went from boiling in a part of the old family sugarhouse a half mile back in the woods, to a brand new sugarhouse that we built together to meet the needs of a fledgling business. We became part of local and state associations, farmer's markets and community projects. The camaraderie between family and friends was amazing. It never seemed like work with everyone having such a great time.

We went to all the maple schools and seminars that we could, learning new techniques not only about boiling, but quality and marketing as well. Before long, we were adding onto the sugarhouse and putting in a 5'x14' evaporator, an RO and a walk in cooler. Green's Sugarhouse has become a special place in the area - a place for learning and promotion as well as purchasing products. We give tours year-round, mentor young people, and host local schools.

Being part of a strong Vermont state association helping other sugarmakers was very rewarding. I have been part of The VT Maple Sugar Makers Association, the International Maple Syrup Institute (IMSI) and the North American Maple Syrup Council (NAMSC). I was elected the first woman President of the Vermont Association, and then became President of IMSI.

Along the way I have learned from some of the best in the Industry. I've come to realize that being a sugarmaker is what defines who I am. I wasn't born into this particular way of life, I married into it, but my love for sugaring couldn't be any stronger. It's definitely my passion.

Clinical Study Shows Maple Syrup Better than Refined Sugars for Cardiometabolic Health

The science continues to build on the potential health benefits of maple syrup and its polyphenol content. Data from a new clinical nutrition study demonstrate that maple syrup, used as a substitute for refined sweeteners, provides cardiometabolic benefits and meets the recognized criteria of a functional food. This represents a major advance for not only the maple industry but people with cardiometabolic diseases. The study was jointly funded by Québec Maple Syrup Producers (QMSP) and the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) through its healthy food production initiative, the Programme Alimentation santé.

The research was revealed at the annual conference of the Canadian Nutrition Society (CNS) in Québec City under the title "Substituting refined sugars by maple syrup decreases key cardiometabolic risk factors in individuals with mild metabolic alterations: a randomized, double-blind, controlled crossover trial". It was conducted by a Université Laval team led by Dr. André Marette, PhD, at the Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec and Dr. Marie-Claude Vohl, PhD, at the Institute of Nutrition and Functional Foods. The study examined the effect of substituting 5% of the total daily energy provided by added sugars with an equivalent quantity of maple syrup on the composition of subjects' intestinal microbiota, and its impact on recognized risk factors for cardiometabolic disease. See https://ppaq.ca/en/communiques/major-breakthrough-in-maple-syrup-research/ for more information.

COME TO MASSACHUSETTS FOR THE

2023 INTERNATIONAL MAPLE SYRUP CONFERENCE

Quality from Tree to Table

October 25-28 • Sturbridge, MA

The Massachusetts Maple Producers Association invites you to join us for the 2023 **International Maple Syrup Conference: Quality from Tree to Table**. The industry's largest and longest-running annual conference and trade show will be held October 25-28 in Sturbridge, MA, within a day's drive of 90% of the world's maple syrup producers, convenient to interstate highway travel and easily accessible from several airports.

The event has been held every year for decades, and attracts sugarmakers of all sizes, along with researchers, regulators, and professionals from related industries for four days of research presentations, practical skills workshops, meetings, tours, and networking.

Preliminary schedule

- Wednesday, 10/25: Meetings for NAMSC delegates
- Thursday, 10/26: Tours of sugarhouses and local attractions, and a Taste of Massachusetts dinner
- Friday, 10/27: Research presentations, evening banquet
- Saturday, 10/28: Practical skills workshops

Register online today!

We are also seeking submissions for workshop presentations, as well as donations for the annual auction to benefit NAMSC's Research and Education Fund. For more information, and to register, see:

www.massmaple.org/2023mapleconference/

U.S. Crop Production Report

Released June 9, 2023, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, United States Department of Agriculture (USDA).

Maple Syrup Taps, Yield, and Production - States and United States: 2021 - 2023

	Number of taps			Yield per tap			Production		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
	(1,000 taps)	*(1,000 taps)*	*(1,000 taps)*	*(gallons)*	*(gallons)*	*(gallons)*	*(1,000 gallons)*	*(1,000 gallons)*	*(1,000 gallons)*
Maine	1,960	1,860	1,880	0.262	0.341	0.250	514	634	470
New Hampshire	530	500	460	0.240	0.308	0.302	127	154	139
New York	2,900	2,800	2,500	0.223	0.291	0.300	647	815	750
Pennsylvania	745	710	675	0.226	0.219	0.263	168	155	178
Vermont	6,500	6,650	6,350	0.269	0.384	0.322	1,750	2,554	2,045
United States	14,085	14,000	13,440	0.264	0.353	0.311	3,721	4,943	4,179

Maple Syrup Price and Value - States and United States: 2021 - 2023

[Blank data cells indicate estimation period has not yet begun]

	Average price per gallon			Value of production		
	2021	2022	2023 [1]	2021	2022	2023 [1]
	(dollars)	*(dollars)*	*(dollars)*	*(1,000 dollars)*	*(1,000 dollars)*	*(1,000 dollars)*
Maine	38.60	34.90	(NA)	19,840	22,127	(NA)
New Hampshire	64.90	52.20	(NA)	8,242	8,039	(NA)
New York	37.80	37.50	(NA)	24,457	30,563	(NA)
Pennsylvania	36.20	34.90	(NA)	6,082	5,410	(NA)
Vermont	32.00	33.10	(NA)	56,000	84,537	(NA)
United States	35.90	34.70	(NA)	133,648	171,561	(NA)

(NA) Not available.

[1] Price and value for 2023 will be published in Crop Production released June 2024.

For more data see https://release.nass.usda.gov/reports/crop0623.pdf.

2023 Season Reports from NAMSC Members

Maine

Maine saw an ever-changing maple season again this year. In the southern part of the state, we had producers making syrup as early as January and the rest of the state probable saw a 1-to-2-week earlier start than normal, normal being end of February/first of March. There did appear to be small pockets across the state where producers did quite well, making plenty of syrup and exceeding their normal number of boils.

The north/northwest part of the state, home to our larger producers, overall saw a poor season with some only making 50% of a crop. This section of the state also saw a rapid warm up half way through the season, something not typical for that time of year. This being said, the state still seems to have a decent supply of all four-table grades of "Maine Pure" maple syrup.

On a more positive note, March 2023 the Maine Maple Producers Association celebrated its 40th Anniversary of Maine Maple Sunday® "Always the fourth Sunday in March." This open house day or now weekend for most producers, has proven to be highly successful in promoting maple and the process to our consumers.

MMPA is working diligently on putting together the NAMSC 65th annual meeting plans for 2024 in South Portland, Maine. We will keep folks posted as plans move along.

Massachusetts

Inconsistent weather patterns meant inconsistent production reports from Massachusetts sugarmakers this season. More had good reports than bad, though, and often just a few hundred feet of elevation meant the difference between a banner year and a poor one.

Overall, the season was definitely front-loaded, with some who tapped early reporting making more than a third of their crop in January. The temperature topped 60° in some places in mid-February, just a couple of weeks after a -10° freeze. In general, January was warm, February was dry, and a March Nor'easter dumped three feet of heavy wet snow on much of the maple region of the state that simply stopped the syrup from running, prompting one producer to report that he had never before pulled buckets with four feet of snow on the ground.

We heard many reports of heavy niter making filtering difficult, and also of far more Golden syrup being made than in recent years. Sugar content was average.

Our annual meeting was in-person for the first time since 2019, and featured a workshop from Mark Isselhardt. Our season kickoff was hosted by the Ripley family at their new sugarhouse in Granville and received excellent press coverage, as did several subsequent tours for staff of the Massachusetts Department of Agricultural Resources and for legislators. Maple weekend was well-attended, with a few

dozen sugarhouses welcoming crowds for demonstrations, samples, sales, and pancakes during the third weekend of March.

The Massachusetts Maple Producers Association is now focused on planning for our booth at the Big E in September, and for the international maple conference – "Quality from Tree to Table" – we are hosting in October!

Michigan

Our Annual Meeting and Education Conference was held on January 20 and 21, 2023. Several years ago, we expanded our January meeting to include a Friday evening round table. The Friday evening event has grown each year and 2023 was no different. We ended up with standing room only. Producers share best practices and get answers to issues they may have as there is usually someone there that has already dealt with their problem. Our main speaker for the day was Aaron Wightman from Cornell University. Aaron spoke on the effects of maple production in a warming climate. Jesse Randall also gave us updates on maple grants and the MSU/ Escanaba Sugarhouse. We had 42 entries in our syrup contest this year.

We had 35 producers take part in Maple Weekends which run the last three weekends in March. From all reports all were successful open houses providing education and pleasant days in the woods.

The next event Michigan Maple Syrup Association has is Fall Tour which will be held in the western Upper Peninsula starting at Escanaba on September 23, 2023.

The Northeast and Eastern Central part of the Lower Peninsula many producers reported excellent crops this season even though average sugar content was between 1.5 and 2.2. Long season from mid-February to mid-April. Other producers in this same area reported average to very poor season.

Massachusetts sugarmakers and state officials gathered at Maple Corner Farm in Granby on March 3 to tap the ceremonial first tree of the season and read a proclamation from Governor Healey declaring March to be Maple Month.

Western part of the UP had a shorter than average season with average sugar content of 2.2. Even with the shorter season they had a high volume of sap so it ended up to be a good season. Warm weather shut them down two weeks early.

The southwestern part of the Lower Pen-

insula was a short season with weather warming early resulting in a poor season.

Minnesota

Minnesota is approximately 400 miles (640 KM) from its southern border with Iowa to the northern border with both Ontario and Manitoba. Maple syrup is produced from border to border, south to north. Typically, our southern MN producers are three to four weeks ahead of our northern producers. Southern producers frequently wrap up their season and begin clean up, before those in the north have experienced their first boil.

The 2023 season followed this pattern, but the season was compressed with very late starts reported statewide. Record snowfall, late ice storms and cool temperatures delayed the start of our season in many areas. For most producers, record snow accumulation in the woods made for tapping, set-up and collection challenges.

Based on producer reports at our spring membership meeting in May, Minnesota experienced a "down" year, with some positive exceptions which directly correlated to localized freeze/thaw cycles. As expected, our producers on vacuum typically better than those on gravity. Producers generally reported lower than typical sugar content, (2- 2.25%) throughout the season. Producers also reported a crop comprised of quality amber/rich grade with reduced golden/delicate and dark/robust this season. Some producers in the south experienced mid-season high temps in the 70's F (21 C) which resulted in poor sap quality and some off flavored syrup.

In summary, it was a challenging season with disappointing results for many, but not all!

At the association level, in January the MMSPA board made a special one-time offer for members to participate in a group purchase of the new 3rd edition of the North American Maple Syrup Producers' Manual *at half price*. We purchased and distributed 70 manuals at a cost to the member of $25 per manual. The difference was subsidized by the MMSPA. The promotion was well received and demonstrated tangible value to membership in the association. We also picked up 33 new members as the offer was promoted on social media sites as a benefit of MMSPA membership.

In the fall of 2022 and spring of 2023 we were finally able to resume post-COVID in-person member meetings. Our recent spring meeting included an in-depth educational presentation by Jim Adamski of Roth/CDL Wisconsin on "Maple Flavors: The Good, The Bad and the Ugly." Winning entries from our annual maple syrup contest were compared with "Off-Flavor" samples (sour, buddy, and metabolism). It was the first time many of our producers had the opportunity to actually sample and compare quality syrup with not-so-good syrup. We knew the program was a success when the universal response to the off flavor samples was "YUCK, Where is my water?" Thanks to the University of VT and the IMSI Grading School for the off-flavor examples shared during the presentation.

The MMSPA has experienced significant turnover on its board of directors with several veterans stepping down to make room for new ideas, energy and talents. Many thanks to outgoing president Chris Ransom, outgoing secretary Shelly Carlson and director/NEWS editor Steve Saupe for their many-many years of service to the MMSPA. Welcome as new members of the board: Mike Hofer, Tim Woodrow and Ben Carlson. On the plus side, Steve Saupe will continue in his role as editor of the MN Maple NEWS.

New Brunswick

The maple syrup production for New Brunswick for 2023 was not very good. Possibly one of the worst in a long time. There was a small to moderate amount of snowfall in the south and a much larger amount of snow cover in the north. Much of the early snow we got in the south would start as snow and then change to rain. We seemed to get a lot more above freezing weather early this winter giving us very little snow cover in the lower elevations, and a moderate amount higher up. Little to no frost in the ground was also experienced. A much different story in the mid to northern regions of the province. They experienced colder temperatures and a much heavier snow cover. This made for a later start to the season. Parts of the south got hit in September with hurricane Fiona and a late winter ice storm. Some producers experienced loss of trees and limbs to both extreme weather occurrences.

In the southern region the season started around mid-February and went until early- to mid-April. Much of the south experienced some much colder temperatures late February on into late March. Not much syrup was made in March as the temperature was too cold. April came and the sap did flow some but not very well. Most in the higher elevations saw about a half to two-thirds of a season. Some in lower elevations ended with a great season seeing a full crop made. The sap seemed to run sweeter this year, just not enough of it. The syrup was mostly in the Golden to Amber grades with very little Dark and Very Dark being produced. Temperatures during the season started very cool and when it did warm up in April it stayed warm at night and did not dip below freezing at night, giving slow to moderate sap flow.

The north saw a much different year. Snow was heavy giving a later than normal start to the season for most. The sugar content was average and the syrup quality was in the Golden to Amber range. Very select few might have made syrup before March, if they had tapped early enough. Many of the producers in the north did not start boiling until the first of April. There were many days in April that sap just did not run. Most saw a very poor season giving a total provincial average of 1.1 to 1.5 pounds per tap. Not very good when most producers in the north are used to 4 to 6 pounds per tap. Many of the much larger producers in the north will experience and are reporting thousands of dollars in lost revenue, some close to a million.

Again, prices are higher this year at the retail level and the bulk level. Most producers will receive above average for their production. Most of the province's syrup is shipped out in bulk but more and more seems to be used for value-added products each year.

New Hampshire

Once again, the correct timing of tapping determined whether or not one had a successful season.

In the Southern regions tapping in the latter third of January proved most successful. Producers with new taps and droplines had good runs into the first week of April. Producers with older equipment experienced dry holes by the third week in March. Mid-State, the week of February 10 proved to be the correct date with the last run occurring in the first week of April. We received no official report from North of the Notches this year but rumors suggest tapping the 20th of February was about right with the season ending one week into April.

Color was all over the chart: one producer made 60% of their crop in Golden while many others made none. Amber ranged from 30% to 90% of a crop, while all reporters listed Dark at 10% of crop with no Extra Dark being made.

Our Mid-State producer reported low sugar content with an abundance of sap at 1.2% while the South enjoyed 2.5%

All agreed that there was better production than last year at more than a quart per tap.

Nova Scotia

It has been a very challenging year for Nova Scotia Maple Producers. Most woodlot owners in Nova Scotia suffered severe damages from Hurricane Fiona and subsequent wind storms, then many were hit with some severe ice storms a few weeks before tapping began.

Nova Scotia forests have been changed forever after Hurricane Fiona. There are hundreds of thousands of trees uprooted throughout the province. No species of trees was left untouched.

Most of the wood will rot on the forest floor because there is just so much of it and in many areas it is extremely difficult to deal with the tangled mess of roots and trees.

Many maple operations were severely hit, some losing more than 75% of their production capacity, leaving no option other than harvesting the downed Maples for firewood processing and saw logs where possible. There is still much uncertainty as most of the remaining trees have suffered severe stress, roots slightly pulled out of ground, tops broken, etc.

The damage to maple operations ranged from 20 to 75% and where the later was the case some of the stands will be a total loss. There is some rough estimates that in the counties where Fiona hit the hardest overall 30 percent of the taps pre Fiona were lost.

Many producers started the assessment and clean up hours after Fiona, some chose to not produce, some were forced to relocate to different areas on their land that were less affected and to do complete new tubing installations. Assessment of the future, rebuilding, and replacement of tubing systems will be ongoing.

Maple producers were on the edge of their chair with drill in hand very early this year, as winter never really arrived. Most tapped earlier than usual and it seemed that once tapping started there was a brief three week arrival of winter weather which many feel had a negative effect on overall production.

Sap flows were going well but temperatures quickly went well above seasonal and put a quick end to production around April 10-14.

Many reports show lower yields than average and some 1/2 or less, with very few reporting normal or above crops. Many are uncertain of just how many taps they have left so it's difficult to determine yield. Syrup quality was very good, with excellent flavor through all grades.

New York

Many parts of New York State had a very good year for maple syrup production. As always, some areas performed better than others and many in Western, Central and Catskill regions of the State reported exceptional crops. Northern and mountainous areas reported crops on par with northern New England and eastern Canada. The areas reporting the best production had little snow cover and an uncharacteristically warm winter, with Lake Erie

having no ice cover. Only two major snow events (late November and just before Christmas) left low elevation sugarbushes with no snowpack and little frozen ground. However, weather patterns left the region with perfect combinations of freezing nights and days just above freezing for the several days needed for each run. We did not have the dreaded extended periods of 60–70-degree warmth that in the recent past have ended our seasons in late February or early March. The opposite was true for high elevation sugarbushes with deep snowpack and abnormally cold temperatures late into the traditional season and then the season ending and abrupt warm up in late March.

Those areas reporting excellent crops started sap runs in late January and had heavy production during most of February. Sugar content was average or slightly less than average, but sap just never stopped running. Those with good vacuum and located on east or southeastern slopes had record breaking production (many reporting more than 5.5 lbs./tap). The syrup quality was excellent with very little dark robust and almost no very dark strong syrup being made. Late season sap and syrup filtering was a problem reported by some, but many producers simply pulled taps after drums and containers were filled thus avoiding troublesome filtering or holding out for the last drop of low-grade commercial syrup.

New York State Maple Producers actively and in-person opened their sugar facilities for the 28th annual Maple Weekend the two weekends following

St. Patrick's Day. The weather was not tremendously cooperative, but legions of visitors attended all manner of open house gatherings and pancake breakfasts across the State.

Ohio

I think everyone would agree the 2023 maple season was anything but normal. It started with a fierce snowstorm in late December and ended with a mixture of warm and cold days. If you are a maple syrup producer this is what you are supposed to be looking for. However, this winter was either too warm, too cold, or just right. Depending on where you live, and when you tapped, it was either all good or all bad. Once again, Mother Nature had the final say.

In Ohio the season kicked off early despite a surge of extremely cold weather at Christmas time. Warm weather arrived shortly after New Year's Day. The one thing Ohio producers have learned, when it looks and feels like tapping weather, you tap. This year many producers in both Northern and Southern Ohio started tapping in January. Those tapping in early January would see strong runs into February, but after that the sap flow declined into March. The weather in February largely determined the success of your season. Southern Ohio Producers saw the sap flow and the sap quality end around the first week of March. The Jet Stream kept the cold air in the north and the abnormally warm temperatures in the southern part of the state. This kept the sap flowing in the north, with strong runs into St. Patrick's Day and beyond. For the calendar tappers, who traditionally waited until mid-February to tap, the season was average at best. The result was the best season in decades for the Northern Ohio Producers and one of the worst years in recent memory for producers in Southern Ohio. The amazing thing was that the quality held up remarkably well for a season with so much variability.

The 2023 season saw a lot of Golden and Amber being produced. The flavor was excellent for the most part until the warm weather ended the season. Even then a lot of lighter grade syrup was made right up until the last boil. The biggest problem was filtering, with excessive niter made it very difficult. One of the reasons for outstanding yields was the good sugar content of the sap, averaging close to 2%. Once again, the best yields were achieved on high vacuum tubing systems, but many bucket/bag producers had a good season as well.

Geauga County is the number one maple syrup producing county in Ohio. Geauga County Producers have a reputation for making good tasting light colored syrup. This year the county lived up to its reputation in a big way. Production records were set across the county. It was not uncommon to see a half gallon up to one gallon of syrup per tap being produced. Be assured that there will be no shortage of Pure Maple Syrup in Ohio, especially Northeastern Ohio.

Ontario

The 2023 maple season was another in a long line of years that have been record-breaking in some strange capac-

ity due to climate change. Winter was a mixture of warm weather punctuated by severe snowstorms, and snowpacks in southern Ontario didn't have the chance to build up until late December.

On the heels of this unpredictable winter, spring came early and unwelcome to Southern Ontario in the latter half of January. This left producers of all sizes scrambling to put their taps in, as sap doesn't usually start flowing in the warmest areas until around February 15th. A few large producers and prescient mid-size producers who were tapped early already had their first boils by the third week of January. Prolonged stretches of fairly ideal maple weather meant that this was an extra-long season for those in the South, and by the end of March many producers had experienced yet another record-setting crop.

The rest of the province was not as fortunate. With the exception of Eastern, Ottawa Valley, Algonquin and Algoma districts, all other districts had a fairly average year. Some folks began tapping in early February with the warm spell but payoff varied depending on region. Cold weather at the end of February through to mid-March halted sap flow for a few weeks in many regions, though producers in warmer areas (southern Ontario and Quinte district) experienced great sugaring weather and made significant portions of their crops during this time.

Most producers in colder regions began tapping in earnest around the middle to end of March while the season for Southwestern Ontario was ending. In Algoma, Eastern, and Ottawa Valley, the trees finally thawed out enough by the first week of April that producers were seeing decent runs. However, the ice storm of April 5th downed trees and cut off power to many of these sugarbushes during what should have been the best runs of the season. As a result, folks were unable to run their vacuums and ROs. Many had to work overtime to clear fallen trees from their lines, and in some cases even had to abandon parts or all of their sugarbush for the remainder of the season. In the following week, warm temperatures up to 30C were experienced province-wide and abruptly halted sugaring season for central Ontario. Folks in the colder regions held out for up to two weeks after this warm-weather event but the season in these areas was ultimately ended by trees beginning to bud out.

Over the course of the season, we received over 540 responses to our weekly sap flow survey. Algoma, Algonquin, and Ottawa Valley had the lowest average production syrup/tap while Simcoe & Southwestern had the highest. Our survey also included a question about the percentage of an average crop a producer has made at any given time, with a response of 100% indicating that they had produced the equivalent of an average year's crop. In this respect, Algoma had the lowest production at

approximately 57%, Southwestern was highest at over 120%, and all other regions clustered around 100% or an average year's yield.

It's expected that many producers will be raising both retail and bulk prices this year. PPAQ's bulk price increase, reduced supply, and increased costs are all contributing factors. Furthermore, COVID impacts are still being felt in terms of low equipment and bottle/drum availability, and the closure of some pancake houses and restaurants.

In positive news, the Elmira Maple Syrup Festival returned after 3 years' hiatus and welcomed its usual record-breaking crowds (60,000-70,000 people!) for a weekend of celebration. The "buy local" movement remains strong and many producers are having more trouble filling orders than finding customers.

The challenges posed by climate change are becoming increasingly evident in all aspects of production. It's more important than ever to learn how to manage for healthy forests, and to read signs of stress from pests, drought, temperatures and poor soil conditions. Producers can have a hand in making their woodlots healthy and resilient for the years to come.

Pennsylvania

The word most often told to me to describe this year's season was "weird," followed closely by "difficult" and "long." If you taped trees in the Southwestern portion of the state where they have sugar camps, it seems to have been elevation that most effected the quality of your season. One person that I talked with had a slightly above average year at one of their sugarbushes, but a poor year at the second. Another sugar maker in that area was having one of his best years ever.

The sugar shacks in the central third of the state showed more promise with multiple producers saying that they needed to go buy more drums and that they had never made so much syrup. Some of those with lower yields admitted that had they started a week or two earlier, they might have had a record-breaking year. A common link was that a lot of work that took place between seasons in almost all of the woods that reported outstanding crops so whether the increase was due to the year or due to the improvements, we may never know.

The sugarhouses in the northern part of this long state had an outstanding year. I did not speak to a sugar maker in the northern third of Pennsylvania that didn't boast about how outstanding of a sugarmaking season 2023 was. Most mentioned how the sugar content stayed constant throughout the season better than other years and for others the optimal weather stayed with them longer than usual. Although, today what is "usual" or "typical" when it comes to weather?

Another common link that was echoed statewide was how the syrup was so light and how it would darken then lighten several times through the season. One producer commented that his sugar camp made syrup that has 92% light transmittance. I don't believe that I have ever seen syrup that light.

All in all, PA had a great season, and we are looking forward to an even better season next year. Now, it's time to start thinking about and planning for next season. To start, the best place to find answers to all the questions that you have been asking concerning maple syrup is the Lake Erie Maple Exposition (LEME). This year's Pennsylvania Maple Syrup Fall Tour will be hosted by the Northwest Pennsylvania Maple Syrup Producers Association and run in conjunction with LEME with events starting in the evening on November 9th and running through November 11th. Vendors will be represented from many of the leading maple syrup supply and equipment companies. The topic list is developing nicely for the Friday sessions and the Saturday breakout sessions. More information will be becoming available later this summer and will be posted on www.pamaple.org. Come see us at LEME, and next year let's all have our best seasons ever.

Vermont

Perhaps we could best sum up Vermont's maple season in two words, "it depends." Whether or not sugarmakers saw an average, below average or above average crop really depended in large part on where in the state they were located and how their sugarbush is oriented (direction, slope, etc).

Vermont's season was bookended by two significant storms. First, Elliott barreled through in December with heavy winds causing downed trees and power outages. And then in March, the southern portion of the state received about 3 feet of snow that also caused tree damage and a loss of power. Between those times, some sugar makers waited patiently for the snowpack to melt and the trees to warm up enough to really let go of their sap. In some warmer parts of the state sugarmakers had an average or above average crop year. In other areas of the state (higher elevations and cold pockets) it just didn't happen in the way we expected, despite patience and leak-checking systems. In those areas, the weather just didn't get warm enough, often enough, and soon enough during the season before it came to an end. Some folks reported that this year's crop was in the worst two of the last ten years in terms of pounds per tap. It really highlights for us the variety of micro-climates that exist, even in such a small state! That said, the sugar content was great for most this year and Vermonters made some really high quality syrup. We can't wait to see what that brings for blue ribbons and best of show at the county fairs this summer!

Some other maple news around the state:

Vermont's Sugarhouse Grant Program got underway just before the season started this year. Sugarmakers who participate in VMSMA's Certification Program (focused on food safety regs for pure maple products) are eligible to apply for a grant of up to $15,000 to make related upgrades in their operations. The introduction of the grant program has caused increased interest in the Certification program and we have folks applying for grants to improve their piping in the sugarhouse, move away from copper pre-heaters, pour concrete floors, cover sap tanks and much more. It's exciting work!

Our annual Maple Open House weekends in March and early April were a huge hit! We had about 100 participating locations all around the state. Even the smallest sugarhouses enjoyed hundreds of visitors who were curious about Vermont maple.

We held our first one-day Maple Quality Class in May this year with Mark Isselhardt of UVM Extension and Jason Lilley of Maine Extension, with generous sponsorship from Dominion & Grimm. The 20 available registrations sold out in a quick four hours! Large and small operations, new and old, participated. The conversation, hand-on activities, and tasting ensured that everyone left with much more knowledge. We look forward to hosting similar future events!

Wisconsin

The 2023 Wisconsin maple syrup season started in late February for some producers in the southern part of the state. The cold autumn and early snow made an early start to winter. As the winter progressed milder temperatures and lack of snow were a bit concerning, however this is Wisconsin and if you don't like the weather wait a few days. I started tapping at our sugarhouse in January with less than a foot of snow in the woods. We were able to finish tapping in late January without getting the snow shoes out. Once we got to February it decided to start snowing and it was still snowing in central Wisconsin on the first of May. Some areas of Wisconsin set records for the amount of snowfall for the winter. One record that stands out was Rhinelander, which had 122 inches for the season.

The late spring and lack of sunshine made for a slow start to the season. Temperatures were 10 to 15 degrees below average for most of the season. The dramatic swings in the weather were very noticeable this year with heavy rain in the southern part of the state and mid-season ice storms and weekly snow storms across central Wisconsin. The sugar content was good with most producers gathering sap over 2 brix.

The southern third of the state had a very good crop. Warmer weather conditions thawed the ground and started the season off very quickly. Production in this area of the state was good for most producers with the majority of the crop being made in March. Large runs allowed producers to make a lot of syrup in a very short period of time. Syrup quality was excellent with most of the syrup being in the Golden and Amber category. Production in the southern third of the state concluded for most producers by the first week of April.

The central part of the state made half to three quarters of a crop. The production season started Mid-March for most producers in this area. Sugar content was good as well with brix readings around 2.2 for most of the season. Syrup quality was variable because of the slow flows. Some producers needed to hold sap for several days to get

enough sap to run. Most of the syrup that was made was in the Amber category with producers making as much as 75% of the crop in the Amber color category. The snow cover held on until the temperatures made it to 80 degrees the second week of April. Most producers in north central Wisconsin ended the season with more than a foot of snow in the woods.

The northern third of the state started a few weeks after central Wisconsin. The early season snow that the northern third of the state received meant very little frost in the woods. Many producers in northern Wisconsin found their tubing systems buried by several feet of snow that they normally don't have. Cool temperatures, persistent north winds and very good snow cover brought a late start to the season. The northern section of the state made the majority of their syrup in late March into the first week of April. April. Depending upon your location the northern third of the state made 20% to 40% of a crop.

Overall, the production in the state of Wisconsin was below average. It was the season of variability. The weather conditions were very inconsistent depending on your location, 20 miles made the difference between a run of sap and being froze solid for the day.

The Wisconsin Maple Syrup Producers Association had a very busy year with activities throughout the calendar year. The Wisconsin Maple Syrup Producers Winter Institute and Trade

Show was held January 13 and 14 in Marshfield, Wisconsin. The event was held in person and included clinics and speakers Friday evening and Saturday. The next stop was the Roth Sugar Bush open house February 1-4. The Association participated in the maple weekend at the Wisconsin Farm Discovery center March 10-11 and had its annual first tree tapping at Pozarski Family Farms near Boyd on March 18. Finally, the Association attended the Phelps Maple Festival on April 1 to promote the Association and the benefits of being a member.

The Wisconsin Association will be at the Wisconsin State Fair August 3-13 selling Wisconsin maple products and promoting the maple industry at the State Fair, and at the Marshfield Maple Festival September 16-17.

West Virginia

The 2023 maple season: can we just forget it and consider it a bad nightmare? Temperatures were well above average from November through February. All of these crazy warm days and way higher than normal temperatures led to bad things for most producers. The producers that tapped the first two weeks of January seemed to have a better season than producers who tapped the last half of January or in February.

The producers that tapped before the middle of January saw a very good run the third week of January. Temperatures then warmed up until the end of the month, after a few good days of sap flow until another good freeze around the first of February. Producers using buckets and gravity tubing experienced very weak sap flows this season.

The statewide average was well below 2 lbs. per tap and overall, about 50% of a normal crop. Along with a lack of cooperation with the weather and temperatures, the sugar content was lower than normal, likely because of the lack of freezing. Most producers finished in February with the sap turning buddy for most. It seems the biggest culprit of the extreme conditions seen this winter was the jet stream. It was much further north than normal, and this allowed the warmer temperatures from the Gulf to push up into most of the state. The farther north in West Virginia a producer was, the cooler the temperatures and the better the conditions for production.

In conclusion, 2023 was the worst crop in West Virginia since the 2010 season when a lot of the state received 130 to 180 inches of snow. As the old saying goes, "there is always next year." One thing for sure is that maple producers are always looking forward to the next season with anticipation. The "salt in the wound" for most producers was the below average temperatures that the state experienced the first three weeks of March. Unfortunately for nearly everyone, the sap was buddy. The few producers that continued to produce throughout the month of March, nearly all of the syrup was off-flavored. Some producers kept waiting for temperatures to change and this never happened, and they never tapped. Other producers in warmer climates only made 10-15% of a crop.

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Every time you set a tap, fire your evaporator, or put syrup into bottles, you are benefitting from research that helped us all learn how to do these things better. Much of that research has been supported by the North American Maple Syrup Council's Research and Education Fund. The Fund has given out more than $1 million in grants in the last 35 years, catalyzing the research that has helped the maple industry grow and thrive.

The fund gets its resources from industry stakeholders – equipment manufacturers, producer associations, dealers, and individual producers. Alliance Partners commit to making annual contributions that help assure the long-term sustainability of the Fund.

If you're interested in becoming an Alliance Partner, or in making a one-time donation to the fund, contact NAMSC Executive Director Winton Pitcoff at mapledigest@gmail.com, or Treasurer Joe Polak at joe.maplehollow@frontier.com.

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Contact your attorney for information on how to revise your will, or your financial institution, plan administrator, or life insurance agent for the procedures required to revise your beneficiary designations.

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