

Maple Syrup Digest



Vol. 57, No. 2

June 2018



**High Brix Processing
Crop Reports
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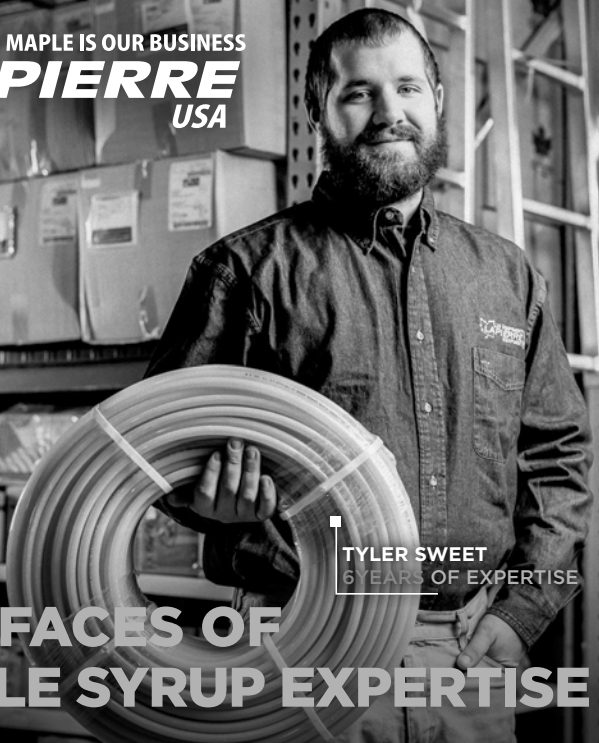
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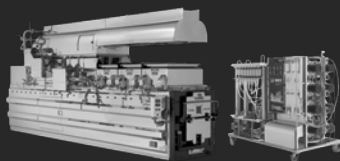
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NAMSC Executive Director: Michael A. Girard, CT

860-658-5790 • mgirard@simscroft.com

North American Maple Syrup Council Directory of Officers

David Briggs, **President**, NB
506-382-3380, dsbriggs@nbnet.nb.ca

Debbi Thomas, **Vice-President**, MI
989-685-2807, debbi1612@hotmail.com

Joe Polak, **Secretary-Treasurer**, WI
715-536-7251
joepolak@frontier.com

DIRECTORS

J. Mark Harran, CT
860-567-3805, jmharran@aol.com

David Hamilton, IN
765-836-4432, dave@rutherfordsugarcamp.com

Lyle Merrifield, ME
207-892-5061, merfarm@aol.com

Winton Pitcoff, MA
413-634-5728, winton@massmaple.org

Ralph Fideldy, MN
218-326-0614, timbersweet@hotmail.com

David Kemp, NH
603-532-8496, david.kemp7@myfairpoint.net

Eric Randall, NY
585-547-3596, randall-maple@msn.com

Avard Bentley, NS
902-548-2973, jbentley@ns.sympatico.ca

Dan Brown, OH
740-501-4681, dnbrown33@gmail.com

Brian Bainborough, ON
705-229-9345,
brian.bainborough@sympatico.ca

Larry Hamilton, PA
814-848-9853,
hamiltonsmapleproducts@gmail.com

Cécile Brassard Pichette, QC
450-439-2329, cecile.bp@hotmail.com

Thomas Buck, RI
401-377-2418, UncleBck@aol.com

Tom Darnall, WV
melindad1@frontier.com

James Adamski, WI
715-623-6853, cdladamski@gmail.com

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Greetings from your President



I have just returned from this year's annual Maple Hall of Fame induction ceremonies in Croghan, NY at the American Maple Museum. Two new members were inducted this year: Bruce Gillilan from Vermont and Eric A. Randall from New York. You can find their biographies in this issue of the *Digest*, and I would like to take this opportunity to again congratulate both of them on their well-deserved honors.

During my time in Croghan we also conducted our second meeting of delegates of the year, with some participating in person and others on the phone. Some of the items that were discussed and items that we are currently working on included:

- 1) The survey we conducted regarding how to best revise and update the *North American Maple Syrup Producers Manual*. 238 people responded and the consensus is that there is a definite need for a new edition. We are working with researchers on a possible grant opportunity to facilitate this.
- 2) Upcoming supplements to the *Digest*, which will include quality control in the sugarhouse and tapping guidelines, among others.
- 3) The off-flavor kits that were distributed to member associations, and the possibility of new ones being produced with different off-flavors.

- 4) The October convention in New Hampshire. Things are progressing along very well. There will be some restructuring of our own meetings as well as a topical or keynote speaker during our formal meeting session. Suggestions for topics or speakers are welcome.
- 5) The Hall of Fame room improvements at the Museum are complete and look great. The new pieces of electronic equipment are now in place for use.
- 6) We may need to take some time in the near future to relook at our strategic plan. It is being followed as much as possible and things are progressing, but our priorities change, and therefore our plan may need updating.
- 7) A letter from the Council will be sent in opposition to the added sugar line proposed by the FDA for nutrition labels on maple syrup.
- 8) A letter was sent to the Vermont Maple Sugar Makers' Association president requesting that they consider rejoining our Council. They are not ready to do so now, but will revisit the idea in a year's time.

Our production season has wrapped up here in New Brunswick. Many have pulled their taps and shut their sugarhouse doors, while others in the north are just finishing their cleaning and final preparations before shutting everything down. It was a mixed bag of results here in New

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Brunswick, with some saying, “when is it ever going to end?” while others in the north asking “when is it ever going to start?”

Being involved internationally I have heard from many all over the producing states and provinces. It wasn’t a bumper crop, which may help us use some of the surplus product that has accumulated over the last few. If we continue to out-produce what we sell we are going to be in trouble. Bulk prices will either stay the same or, worse, go even lower. With the ever-increasing costs of production, it will be very difficult to be a profitable, viable industry.

For some, the season is now over, and for others the daunting task of marketing and selling of our maple syrup and maple products now lies ahead. On behalf of the delegates, alternates, executive committee, and member states and provinces, I encourage everyone to be ever mindful and use maple syrup when ever you can. Promote and use maple products every chance you get and have a safe and wonderful summer.

*Warm regards,,
 David Briggs, President, NAMSC*



Cover photo: 2018 Maple Hall of Fame inductees Eric Randall and Bruce Gililan.

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High Brix Syrup Processing – First Two Seasons with Lapierre HyperBrix

*Timothy D. Perkins, Abby K. van den Berg, Brian Stowe, and Wade Bosley,
University of Vermont Proctor Maple Research Center*

Over the past fifteen years, research and demonstration sugaring operations, like many private maple operations, have grown tremendously. In the case of the University of Vermont Proctor Maple Research Center, we have gone from about 1,500 taps in 2004 to nearly 5,000 taps in 2017 and 2018. During that time we upgraded our reverse osmosis (RO) system to a new machine, then added an additional post, and steadily increased our concentration level to near maximum levels supported by the RO. Despite these changes, in 2016 we were occasionally having to boil for extended periods of 8-10+ hours, with repeated switching of sides to control heavy niter deposition. Long-term plans envisioned further expansion to more than 6,000 taps, so the sap processing issues were likely to become more problematic. Although our previous equipment and processing methods had served us well over many years, it was clear that a major shift in processing was needed.

Given our extensive research experience on RO processing and flavor, and the appearance of new RO technology that could concentrate to higher levels, a shift toward this new technology seemed appropriate. Therefore after investigating various options, we entered into a partnership with Lapierre Equipment to

utilize the new HyperBrix RO system at UVM PMRC. This paper describes some aspects of our first two seasons of use of this equipment. Given the state of the industry, we define “high brix” maple sap processing as RO machines capable of producing concentrate at 30°Brix or higher.

For sap processing, we used a five-post Lapierre HyperBrix RO (Figure 1) for the 2017 season. A HyperBrix RO is two machines that are combined into one: a low pressure (standard RO) side and a high pressure (HyperBrix) side. The PMRC machine was initially equipped with three membranes on the low concentration side. We expanded this to four membranes before the 2018 season to increase sap processing rates to better match the evaporator, a Lapierre Volcano 2000 (Figure 2). The evaporator consists of a 4' x 4' back pan (2 partitions) and a 4' x 8' front pan (8 partitions), equipped with a hot-water heating loop in the back pan hood, and a variable-fire Riello oil burner. Our system also came equipped with hoods, a reverse-flow option, front and back pan spray washers, and an electronic auto-defoaming unit.

The goal of the 2017 season was to gain familiarity with processing sap through the RO and evaporator, to explore the limits of operation, and to evaluate different types and com-

binations of membranes. In 2018 we sought to further optimize system operation as well as to continue to evaluate performance of various types and combinations of membranes. This article will address general operational issues of the RO and evaporator, with membrane performance left for another article.

Operating the Lapiere HyperBrix RO is very similar to operating other models of maple RO machines. The controls are essentially very similar, with the exception of duplicate controls for the low pressure and high pressure (HyperBrix) sides of the device. Anyone familiar with general RO operation could quickly learn to operate the machine.

In 2017, we processed over 107,000 gallons of sap (Table 1), averaging 2.15°Brix, producing 9,278 gal

of concentrate ranging from 26.2 to 35.6°Brix. Because the concentrate from machine start up and sugar purge, along with liquid from filter press washes were added to the concentrate tank as well, the effective concentrate level in the evaporator feed tank averaged about 25°Brix over the entire season. This produced a total of 2,634 gallons of syrup, thus equating to a concentrate-to-syrup ratio of 3.39 gallons concentrate to produce 1 gallon of syrup.

We boiled 22 times in 2017 (Table 2), totaling 68.8 hours. The longest boil was 5.5 hours, with an average boil time of 3.1 hours. Average evaporation rate was 103.2 gallons per hour, with an average syrup production rate (draw-off rate) over the entire season of 38.3 gallons per hour. This value includes start-up and occasionally switching sides. At peak,

we produced 50-55 gallons per hour. The overall total processing rate (evaporation rate + draw-off rate) was 141.5 gallons per hour. Over the season we used 711 gallons of kerosene (kerosene has a slightly lower BTU content than fuel oil,

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Figure 1. Lapiere Equipment HyperBrix Reverse Osmosis machine in operation at the Sumner Hill Williams research/demonstration sugarculture at UVM PMRC in 2018. Note the flow-meters and inline refractometer on lines in the upper right of photo. *Photo Credit: Timothy Perkins, UVM PMRC.*

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but is less susceptible to fuel gelling at cold temperatures), resulting in a fuel-to-syrup ratio of 0.270 gallons kerosene per gallons of syrup produced.

In 2018, we processed nearly 135 thousand gallons of sap (Table 1). Average sap sugar was slightly lower, averaging 2.00°Brix over the season. Concentrate from the initial start-up and sugar purge were diverted back to the sap tank, with only concentrate at the target level sent to the tank for processing. In this way, the range of concentration was kept within fairly tight limits of 34.5-37.5°Brix, averaging 36.0°Brix over the season. Typically, with the 6-post configuration set to concentrate to 36°Brix, about 1,200-1,400 gallons of sap were pro-

cessed each hour of machine operation, resulting in about 100 gallons of high-brix concentrate per hour. Some warming of the liquid was apparent during concentration, but this was negated by immediate processing in 2017 or through the use of a refrigerated bulk tank in 2018. Boiling in 2018 produced 3,038 gallons of syrup, yielding a concentrate-to-syrup ratio of 2.45 gallons of concentrate for each gallon of syrup produced.

Due to the addition of a refrigerated bulk tank, in 2018 we boiled only 11 times (Table 2), with a maximum boil time of 5.5 hours. Because we only boiled once for every 2.5 sap collection and concentration cycles, the average boil time increased to 3.7 hours. The average evaporation rate rose slightly to 106.8 gallons per hour.



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	2017 LAPIERRE HYPERBRIX 4' X 12'		2018 LAPIERRE HYPERBRIX 4' X 12'	
Sap Quantity	107,212	gal	134,819	gal
Average Sap Sugar	2.15	*Brix	2.00	*Brix
Range of Concentration	26.2-35.6	*Brix	34.5-37.5	*Brix
Average Concentration	31.1	*Brix	36.0	*Brix
Effective Concentrate	>25	*Brix	36.0	*Brix
Number of Concentrations	22		27	
Concentrate	9,728	gal	7,443	gal
Concentrate:Syrup Ratio	3.39:1	gal/gal	2.45:1	gal/gal
Syrup Produced	2,634	gal	3,038	gal
Syrup Yield	0.53	gal/tap	0.62	gal/tap

Table 1. General characteristics of sap concentration using the Lapierre HyperBrix in 2017 and 2018.

With the higher level of concentration, syrup production rate increased to 67.7 gallons per hour, with a maximum production rate of ~75 gallons per hour. This produced a total seasonal average processing rate of 180.8 gallons per hour. Only 416 gallons of kerosene were required for the 2018 season, with only 0.137 gallons of kerosene needed to make a gallon of maple syrup. This represents nearly a doubling of fuel efficiency due to the higher concentration levels (36°Brix) used in 2018 compared to the concentration used in 2017 (25°Brix). Given that the concentrate was chilled and stored at 23°F in 2018 before being sent to the back pan, increasing fuel efficiency further by pre-heating the concentrate before it reaches the back pan is

something we will likely explore over the next few seasons.

With the assistance of Efficiency Vermont (www.efficiencyvermont.com), we also monitored electrical usage of the RO during the 2018 season. At the

time of this writing the analysis was incomplete, so results will be presented later.

While RO machines are often thought of as energy-saving devices, they also reduce the time spent boiling tremendously. What is less well recognized is the extent to which even small increases in concentration can yield significant time savings in sugarhouse operations. In 2017, sap

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	2017 LAPIERRE HYPERBRIX 4' X 12'		2018 LAPIERRE HYPERBRIX 4' X 12'	
# Boils	22		12	
Total Time Boiling	68.8	hrs	44.9	hrs
Maximum Length of Boil	5.5	hrs	5.5	hrs
Average Length of Boil	3.1	hrs	3.7	hrs
Average Evaporation Rate	103.2	gal/hr	106.8	gal/hr
Syrup Production Rate	38.3	gal/hr	67.7	gal/hr
Max Syrup Production Rate	50-55	gal/hr	~75	gal/hr
Avg Total Processing Rate	141.5	gal/hr	180.8	gal/hr
Fuel (Kerosene) Used	711	gal	416	gal
Fuel:Syrup Ratio	0.270	gal/gal	0.137	gal/gal

Table 2. General evaporation results using the Lapierre Volcano 2000 to process high Brix concentrate in 2017 and 2018.

	2017	2018 without Bulk Tank	2018 with Bulk Tank
Number of Concentrations	22	27	27
Concentrate Level	25 Brix	36 Brix	36 Brix
Number of Boils	22	27	11
Time Boiling	68.8 hrs	44.9 hrs	44.9 hrs
Clean-up Time (2.5 hrs/boil)	55.0 hrs	67.5 hrs	27.5 hrs
Total Time (boil + clean)	123.8 hrs	112.4 hrs	72.4 hrs
Syrup Produced	2,634 gal	3,038 gal	3,038 gal
Syrup Prod Rate (Total SH hrs)	21.3 gal/hr	27.0 gal/hr	42.0 gal/hr
Time Savings (for 3,000 gal)	0 hrs	29.7 hrs	69.4 hrs

Table 3. Time efficiency results for high-brix evaporation in 2017 and 2018.

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runs required 22 concentrations to an average effective level of 25°Brix and 22 boils, totaling 68.8 hours (Table 3). Since clean-up after each boil requires 2.5 hours, total sugarhouse operation time in 2017 was 123.8 hours for 2,634 gallons of syrup produced, or 21.3 gallons of syrup per hour of operation. In 2018, had we not used a refrigerated bulk tank, concentrating to 36°Brix on 27 occasions would have produced 27 boils totaling 44.9 hours for 3,038 gallons of syrup, or 27.0 gallons syrup produced hourly, resulting in a time efficiency increase of 26.8%, equating to a time savings of nearly 30 hours over 3,000 gallons, or three hours per week over the 10 week season. By using a refrigerated bulk tank to reduce the number of times we boiled, we saved even more time. In actuality, we boiled only 11 times in 2018 (2.5 concentrations/boil), with 44.9 hours of evaporator time and 27.5 hours of cleaning time totaling 72.4 hours of sugarhouse operational time to produce 3,038 gallons of syrup. The syrup production rate was there-

fore 42.0 gallons per hour of sugarhouse time, with a total time savings of 69.4 hrs in 10 weeks, or almost seven hours additional of work-time saved each week. The combination of concentrating to a higher Brix level and using a bulk tank

increased time efficiency in the sugarhouse by almost 100%. This leaves considerably more time to work in the woods in keeping vacuum levels, and thus sap yields, high.

In both the 2017 and 2018 seasons, we used caustic soap to wash the membranes after each use, followed by a permeate rinse. Based upon benchmarks, this seemed to keep flow rates acceptably high throughout both seasons. Niter seemed to be light-moderate both years, with a pan rinse and permeate soak sufficing after most boils, and pan acid used only 1-2 times during each season. The heat loop in the back pan produced 500 gallons or more of hot permeate water each boil. Syrup grade was good each year, perhaps a little lighter than what we normally produced in 2017, but very light throughout 2018. Light syrup seemed to be common in our area in 2018, but may have also been due to several changes we made in our operation (refrigerated bulk tank, new sap filtering regime). Due to the

high rate of syrup production in 2018, we moved to filtering immediately off a draw-off tank rather than using a finishing pan. This also resulted in significant time savings and probably accounts for some of the increase in light transmittance. Syrup flavor was excellent both years, with no off-flavors attributable to processing being evident.

In summary, moving to high brux sap processing with the Lapierre Equipment HyperBrix RO and Volcano 2000 evaporator has proved to be an excellent fit to the UVM PMRC operation, and has resulted in significant improvements in energy and time savings without compromising our high standards for syrup quality. This equipment will also serve as a platform for continued research on sap processing.

Acknowledgments

Our thanks to Lapierre Equipment for partnering with UVM PMRC on this project. In particular we wish to thank Donald and Carl Lapierre, as well as Jeff Goulet and Eric Miller. In addition, we thank Brendan Haynes,



Figure 2. The Lapierre Volcano 2000 4' x 12' evaporator in the Sumner Hill Williams Sugarhouse at UVM PMRC in spring 2017. From left-right, Donald Lapierre (Lapierre Equipment), Dr. Timothy Perkins (UVM PMRC), Dr. Abby van den Berg (UVM PMRC), Jeff Goulet (Lapierre Equipment), Carl Lapierre (Lapierre Equipment), and Brian Stowe (UVM PMRC). *Photo Credit: Peter Gregg, The Maple News.*

Collin McCarthy, and Ben Crosby for their assistance in the sugarhouse. A gift from the Robert and Oletha Bickford estate paid for a portion of the UVM PMRC sugarhouse upgrades in 2018 and is gratefully recognized.

Spout/Tubing Sanitation Publication to be available in June

The UVM Proctor Maple Research Center and Cornell Maple Program conducted a multi-year joint research project investigating spout and tubing sanitation methods. The full research report will be released in June 2018, with summaries to be published in upcoming editions of the Maple Syrup Digest and the Maple News. To receive a PDF copy of the full report when it is released, please email Timothy.Perkins@uvm.edu



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2018 Crop Reports

Connecticut

The 2018 season yielded an average crop, with results varying widely across the state and even between neighboring zip codes. Some had a great year while others had a subpar year. Generally, however, for all Connecticut maple producers the 2018 season was much better than the 2017 season. Common to most was low sap sugar content, high niter content, an unusual move from darker to lighter syrup as the season progressed, and an early, almost abrupt, end to the season despite a forecast of favorable temperatures.

The MSPAC Annual Membership Meeting was held on November 4, 2017 at Session Woods State Park in Burlington, CT. Following the annual business meeting, there were two guest speakers. First, Dr. Abby van den Berg from the University of Vermont brought everyone up to date on what is brewing (or maybe better “boiling”) at the Proctor Maple Research Center at UVM and provided some advice on how small sugar makers, as many of us are in Connecticut, can maximize both the quantity and quality of the maple syrup we make. Second, Diane Hirsch from UCONN helped members better understand the Food Safety Modernization Act (FSMA) and how it will affect Connecticut sugarmakers.

The MSPAC Pre-season Meeting was held on January 20, 2018 at Lyman Memorial High school in Lebanon, CT. As in the past, there were three specialized workshops that followed the one guest speaker, Brenda Noiseux, from New Hampshire, who told the group how to “Cultivate a Web Presence.” The three workshops, which the 120 attendees rotated through, included a

session on identifying off-flavors using samples produced by UVM courtesy of NAMSC, a candy making demo showing members how to make candy without the need for an expensive candy making machine, and a session that dealt with the equipment needs and other considerations that should be addressed in moving from a small 50 tap or less operation to a much larger one.

The 2018 membership meeting will have three speakers: Kathy Hopkins (University of Maine) addressing quality issues, Tim Wilmot (UVM and D&G Evaporator) addressing 3/16 tubing, and Bruce Gillian (Leader Evaporator) addressing equipment options to consider as a maple producers scale up their operation. The date is November 10, 2018 and the location will be announced soon.

Indiana

Information in this crop report represents only a small fraction of Hoosier sugar makers and does not contain data from either the Indiana Department of Natural Resources survey or NASS.

The past three maple seasons in Indiana have not fit into the normal pattern, but who is to say what is normal anymore. During this span it has been ‘normal’ to tap in January and sometimes early in that month. Forty years ago it was ‘normal’ in the Hoosier state to tap around Valentine’s Day and now half of our production occurs prior to that date.

Of the camps surveyed for this early crop report, this year’s tapping began in some areas as early as January 8 and most producers were done tapping

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by very early in February. The season ended all over the state between March 15 and March 28. All of those producers responding to my early inquiries reported an above average season as far as production. Some sugarmakers were making light syrup right up to the end of the season. Dark syrup has been much in demand by Hoosier consumers and some of us made very little of that grade.

Most sugarmakers reported a sap sugar content of 1.5-2.5°Brix. In my camp the sugar content never dropped below 2.2°Brix. Several producers saw the flow of sap decline in the middle of February due to several warm days and re-tapped their trees. I usually saw little benefit in following this practice, but this year it sure paid off.

Maine

Maine saw a huge range of production results from the 2018 sugaring season. Southern and lower-central Maine had most producers done tapping by early- to mid-February. For most in this area it proved to be a very long, dragged-out season. The cold snaps carried us well into April. Most producers had an average season, but a few had a great season.

Upper-central and northern Maine, home to some of our largest producers, had a slow start because of the cold. This made for a somewhat shorter season than normal for many, with most producers wrapping up by mid-May. Some producers reported that production was down as much as 30% over previous years but again, similar to Southern Maine, some pockets showed good production.

With the volume of syrup down for

2018, it appears that there will still be good supply of all four table grades of Pure Maine Maple Syrup, the Official Sweetener of Maine.

Massachusetts

In Massachusetts, as in much of the rest of the sugaring region, we had March in February, and February in March. A few early tappers boiled at the very end of January. Most were well under way in February, with some making more than half of their crop by the end of the month, though a few 70 degree days had many worried that the season would end very early. But then all came to a screeching halt as March brought several storms and frigid temperatures and gave everyone a break from boiling for a while. Warmups in late March and early April revived the season, and a few continued on until the last week of April.

Sap sugar content was generally low, and reports of excellent quality syrup of all grades came from sugarmakers around the state.

The big news is that celebrating maple in March is no longer just fun here in Massachusetts – it's the law! The governor signed "An Act designating the month of March as Massachusetts Maple Month."

Michigan

Southwestern Lower Michigan: First boil was February 8 with the last boil on April 7. Dates varied for producers, although this was the average. The grade was mostly strong Amber to Dark, with an average sugar content for sap at 1.9°Brix. Most made an average crop.

Central Lower Michigan: First boil was between February 19-22. Of the producers reporting, sap flowed for six to eight weeks. Record crop reported,

with one producer reporting lighter than normal and one not making any light syrup – all Amber with great flavor all season. Sap quit before much robust syrup was produced. Sugar content fluctuated between 1.5-3°Brix.

Thumb area: 2/3 of a normal crop was reported. Weather conditions were just not good for our Thumb producers. Season lasted for approximately six weeks, however weather would freeze for several days, warm up and freeze again, so boiling days were few and far between.

Minnesota

2018 will be a year to remember for a while in Minnesota. Most of northern Minnesota had weather that we would call “Goldilocks weather.” The temperatures were either too cold or too hot and not enough just right.

The north had too much snow and it wasn’t disappearing around the tree trunks – in fact more ice was forming on our lakes when it suppose to be thawing. The days finally started warming up a little before the end of March but the nights were still very cold. It didn’t make any difference if you were on buckets or on vacuum systems with tubing. Then we got two weeks of very cold weather, with no sap at all. Finally, when our season would normally be almost done, it started to warm up. Some small sap runs, then the weather got warm and the frogs were croaking. Even though there was ice on ponds and the pussy willows weren’t filled out, trees were starting to bud.

Many of the northern producers made 1/2 to 3/4 of an average crop, and a lot of darker syrup was made. Many small producers using buckets wondered what was wrong and gave up.

Some producers in the middle and southern parts of the state had excellent crops, regardless of whether or not they were using tubing. Lots of large snowstorms with deep snow affected their production.

New Brunswick

This year’s maple syrup production was not a great year.

The southern region of the province had very little snow cover. Weather this winter was very unstable, with many fluctuations in temperatures. We had everything from a severe cold spell, to many snowstorms changing to rain. By about mid-February there was very little snow on the ground so many started to tap. Those who tapped early saw some early runs in late February. March rolled in and remained below the freezing point pretty much all month, with some days barely reaching above melting. Mid-March saw three major snowfalls amassing a thick blanket of snow. We had more snow cover then than we had all winter.

April finally provided us with decent running conditions. However, the only producers who saw great runs were those in low-lying areas. The higher elevations saw only moderate runs throughout the season. Sugar content of the sap was around 1% to 2%, with some in a few areas reporting higher percentages. Most producers in the south got varying degrees of grade. Some golden and amber grades were made and the season ended before the dark and very dark were produced.

The further north you progressed into New Brunswick the deeper the snow cover became. The snow accumulated to well over five feet in many ar-

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eas of the north. Larger producers who tapped early saw a bit of sap early in February, but most didn't come until late into the season, around the first of April, and some producers boiled up to the first of May. Most producers in the north had a year they would rather soon forget. The production reports coming in were only about 25%-33% of a season, down drastically. The production per tap was around 1.5-2 pounds, very low for an area that usually sees between 4-5 pounds per tap.

With the bulk of our production in the north our overall season will be down significantly. Sales are still very strong and maple expansion is always ongoing. With a number of larger sugar bushes starting up or expanding we are closing in on close to 3 million taps.

New Hampshire

New Hampshire's northern region reported 70% of a normal crop, with the central and southern regions reporting full to excellent crops, but very site specific. Cold temperatures negated the benefits of early tapping. Sugarbushes with lower elevations and south facing slopes were most productive.

Most first boils were reported in late February. Very good quality syrup was made, with early runs producing darker syrup with robust flavor, turning lighter in color and more delicate in flavor as the season progressed.

Many producers were frozen up on Maple Weekend and were forced to boil water for visitors. When April finally warmed up many tapholes had dried up and a less than normal amount of syrup was produced in April. Many

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southern producers reported the most squirrel damage in memory.

New York

Syrup production in New York State varied greatly from region to region and producer to producer. Some producers started tapping in January and had a half of a normal crop made by March 1.

Syrup generally was a little darker in January and February and lightened up after the cold weather in March. Syrup color overall was lighter in 2018 than it was in 2017. Sap sugar content was lower than normal throughout the whole season.

In general, the southern regions and lower elevation warmer woods had close to a normal year. Some of the colder woods had a half of a crop. I think that New York State will come up with about 90 percent of what was produced last year – which is better than the rest of the industry overall. Producers that had extensive forest tent caterpillar defoliation last summer did very poorly.

As usual, the spout and dropline sanitization program that producers are implementing makes a big difference in overall production.

Nova Scotia

Most producers started to tap around February 15, when there was very little snow in the woods. Some areas did not have to wear snowshoes. Some producers boiled in February.

Then came March, cold and stormy. One week in some areas there were three nor-easters which left about 100 cm of snow. Some producers had a hard time getting to their woods. Due to the extreme cold followed by thawing, some drop lines were pushed

off the spiles. Then the woodpeckers moved in causing another headache. Some producers spent more time in the woods than in the past.

It is the same old story that some producers reported that they had a banner year and some had a hard time believing their production. There were others that hardly made expenses. There were only one or two good runs. In some cases it took two or three days' run to make it feasible to boil.

On the whole Nova Scotia had an average crop or slightly above. In some cases syrup was not as light as last year but did not turn as dark as some years. The season was longer than other years, some boiled up to the first of May. Sales have been good or better than in previous years.

Ohio

Maple Syrup production in Ohio was on par with last year, but in some locations the season reset enough to deliver an average year. What made 2018 unique was the extreme weather conditions, which once again have become normal. It was as if we had two maple seasons in one.

Maple production in Ohio has two regions, north and south, with the state capital of Columbus and Interstate 70 being the dividing line. In the south, producers normally tap soon after the first of the year and hope to make syrup into March. The sight of red maples reaching full bloom in the first week of March is not unusual. The 70-degree temperatures in February pushed the season to an early end in regions south of Columbus, very similar to the 2017 season.

In the northern Ohio, the season typ-

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ically runs from mid-February to the end of March. Based on their experiences over the last two years many producers are starting to tap in January. In this area, an early start to the season can prove to be either a blessing or a handicap depending on the year. The last two seasons ended early in March. This year the temperatures at the end of February once again went above 70 degrees and it looked like a replay of the 2017 season. However, unlike last year, the warm weather did not hang around. The first three weeks of March saw some very cold weather move across the area.

With the cold came frozen tap holes that yielded very little sap for 10 days. This left local maple producers that depend heavily on favorable weather conditions from March 1 through St Patrick's Day wondering what would

happen next. Not being able to make syrup for ten days in the middle of March definitely hurts production. Once the cold weather subsided, the season continued into early April. This left many of the early tappers wondering if their trees would continue producing sap at the end of March. Several producers in NE Ohio pulled taps on April 12. This is almost two weeks after the traditional end to the season. The weather held up with snow and cold well into April. However, trees tapped early are on the clock and extended periods between runs resulted in diminishing returns.

Even if the cold weather hurt overall production, it proved to be very beneficial for syrup quality. The warm February weather had everyone making dark syrup shortly after the first run. What happened then was very unusual, and definitely not normal. In the first week of March,

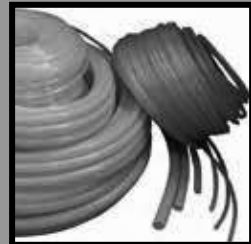


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the cold weather set in and the cloudy sap became clear and the color of the syrup went from dark to light, and it remained that way for the rest of the month. Another factor that made this season unique was the low percentage of sugar in the sap. Locally, producers saw sap sugar content dip to 1%. It is hard to produce a big crop when it takes 70 plus gallons of sap to make a gallon of syrup. Sugar sand and filtering the syrup was very problematic early in the season. It became less of a problem after the cold weather set in and the sap cleared. Once again, just the opposite of a normal year.

Combine all of the above into one season and you have one remarkable and challenging year. After talking with producers across the state and locally, 2018 will go into the books as statistically average or slightly below average depending on your location. One thing for sure, the weather conditions in recent years have altered the definition of a normal season.

Ontario

The season started in mid-February for most throughout the province and continued until late April. Some northern producers boiled into May. It was an exceptionally long season with small sap runs followed by long freezing periods and no major sap runs occurring during the season.

Sap sugar content remained around 2% or better for most for the entire season, producing excellent flavor and all grades, with the majority being Amber. The majority of the province is reporting an average sized crop, although the more southern producers seemed to be reporting higher yields than those north of Highway 7. Our most northern producers along the Great Lakes

experienced much colder temperatures throughout the season and resulted in a very poor crop yield across this region.

More than 70 producers participated in this year's OMSPA "Maple Weekend." This province-wide event is gaining popularity with both consumers and producers as an excellent way to promote Ontario maple syrup and experience the first agricultural product produced in the year. Maple Weekend is in conjunction with many long established (over 50 years) local festivals throughout the province that attract large attendance (60,000 plus for a one day event). These events offer an excellent venue for consumers to experience locally produced maple products and meet producers.

The 52nd OMSPA Summer Tour is being held in Sault Ste Marie this year, July 12-14, presenting technical speakers and tour stops including the largest producer in the province. Please accept this as your invitation to attend OMSPA's Summer Tour.

Pennsylvania

The Northwestern Pennsylvania area had a long but not very productive season. The season began in mid-January with the heaviest runs early producing darker grades of syrup from sap with 1% sugar content. The season finished in the second week of April with most producers reporting 75% of an average crop.

In the southern part of the state, the Somerset area on the Allegheny Plateau, the season started on January 21 and lasted until as late as April 17. Most producers experienced 1% to 1.5% sap sugar content and made dark syrup early in the season. The early season ended

Crop Reports: continued on page 23

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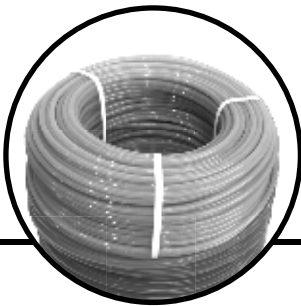


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for some with a warm spell at the end of February. Some producers re-tapped after that and made golden and amber syrup in late March and April.

In the north central part of the state the producers experienced mixed results – some had a very poor season, some below average and a few had an okay season. Only one producer reported a second-best year ever. Grades of syrup made were from dark to light throughout the season.

From the middle of the state, one producer reported making 19 drums of very light syrup between February 20 and March 1.

March 2018 will be remembered in Pennsylvania and probably everywhere! We had a heavy wet snowstorm here overnight which brought down trees and limbs throughout the area. But worse than that was the cold weather, with single temps at night and highs of only 20's to 30's. This lasted for the first three weeks of March until the thaw came again, with only small sap runs to the end of the season.

Quebec

At the end of February and on a few days in March, there was a flood of sap in the western portion of the province. After that, good harvest conditions were a long time in coming. Variable temperatures experienced in March and April, especially in eastern Quebec, resulted in highs and lows in provincial production.

The central and western portions of Quebec saw their sugar season end in the third week of April. Yields were variable from one sector to another, ranging from average to poor. Syrup quality remained high. Some eastern

areas were producing until the beginning of May. According to information gathered, these areas had yields that were lower than those of last year.

Citadelle Maple Syrup Producers' Cooperative consists of 2,000 producers who generate sufficient supply for the processing and marketing of high quality maple products in over 45 countries. The vision of quality and purity handed down to us by our predecessors and founders remains with us always. We are dedicated to offering 100% pure products of a quality that satisfies the needs of consumers around the world. Since 1925 it's what has set us apart and made our reputation, as we are after all "Producers of pure innovation."

Rhode Island

If you want to know anything about little ole Rhode Island, look no further than its state motto: Hope.

We continue to grow as an association, with three new members, and we hope to add more in 2019.

Even as the last few seasons have had drought, winter moths, gypsy moths, no snow, low sap sugar content, unseasonably warm temperatures – you get the idea – for Rhode Island sugar makers, we still held out hope that 2018 would be better than the last few years.

Most of Rhode Island's syrup producers tapped their trees between the middle and end of January. The sap flow was promising. Unfortunately, though January and the first part of February went well, the rest of February warmed up so substantially that the sap flow slowed drastically and the stored sap spoiled quickly if not boiled down fast.

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It seemed that spring had arrived early, and the trees were in a hurry to begin the healing process. Our season seemed to be over as quickly as it started. But then March came. It got cold again, and the temperatures were as they should be. We had hope again, yet March didn't go as well as hoped for those who tapped the earliest, but for those who tapped later in the season the trees were still running.

Last year, Association sugarhouses set 8,082 taps and produced a total of 1,062 gallons of mostly very dark syrup. This year, we produced 1,341 gallons of mostly dark robust syrup, and then very dark syrup with a total of 7,608 taps. So the season was a little better than last year. Rhode Island weather was as usual, uncertain, and it proved to be a challenge once again. Yet, we still have hope for 2019.

Wisconsin

The 2018 Wisconsin maple syrup season for most producers started before March 1. Snow cover in Southern and Central Wisconsin was at a minimum for the fourth year in a row, while sections of the northern third of the state had abundant snowfall. Early winter gave us some below average temperatures, setting a tremendous amount of frost in the ground. With the cold weather the snowfall did not come until late winter, laying a blanket of insulating snow on top of the frozen ground, which led to production issues for most Wisconsin producers.

The Southern third of the state had a good crop with average yields. Very warm weather conditions and very little snow cover in this region thawed the ground very quickly and started the season off very quickly. Production in

this area of the state was very fast paced in early March, with the majority of the crop being made in only a few weeks. Syrup quality was excellent with most in the Golden grade. Production in the southern third of the state concluded for most producers by the second week of April.

The Central part of the state had about 70% of an average crop, with production starting in the first week of March. The season started with very weak sugar in the first part of March, but as the season continued the sugar for most producers jumped to 3 Brix even on the high vacuum tubing systems. Syrup quality was excellent with most in the Golden grade. The average snow cover and a tremendous amount of snow in March and April slowed production to a snail's pace until mid-April, and when the warmth finally came the calendar said it was time to quit.

The Northern third of the state had a slower start to the season, with one of the coldest springs on record for most areas. A blanket of snow covered the ground that received a tremendous amount of frost before the first of the year. This area of the state had a very late start with some producer's first boiling on the 10th of April. This region was at 35% to 60% of an average crop.

Overall the production in the state of Wisconsin was down for the second year in a row. The saving grace for most producers was the high sap sugar content the state had for the majority of the season, and the cold weather that enabled producers to make a very good quality crop.

See more crop reports on pages 45-46.

U.S. Crop Production Report

Released June 12, 2018, 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: 2016-2018

State	Number of taps			Yield per tap			Production		
	2016 (1,000 taps)	2017 (1,000 taps)	2018 (1,000 taps)	2016 (gallons)	2017 (gallons)	2018 (gallons)	2016 (1,000 gallons)	2017 (1,000 gallons)	2018 (1,000 gallons)
Connecticut	85	86	73	0.224	0.233	0.247	19	20	18
Indiana	60	62	70	0.200	0.194	0.257	12	12	18
Maine	1,860	1,890	1,870	0.363	0.375	0.288	675	709	539
Massachusetts	315	320	320	0.244	0.263	0.225	77	84	72
Michigan	400	440	455	0.225	0.250	0.275	90	110	125
Minnesota	76	77	65	0.184	0.182	0.200	14	14	13
New Hampshire	545	550	560	0.310	0.280	0.291	169	154	163
New York	2,515	2,650	2,730	0.281	0.287	0.295	707	760	806
Ohio	370	400	400	0.189	0.200	0.225	70	80	90
Pennsylvania	660	660	670	0.217	0.211	0.212	143	139	142
Vermont	4,850	5,410	5,670	0.410	0.366	0.342	1,990	1,980	1,940
West Virginia	51	61	66	0.118	0.148	0.121	6	9	8
Wisconsin	765	735	750	0.307	0.272	0.300	235	200	225
United States	12,552	13,341	13,699	0.335	0.320	0.304	4,207	4,271	4,159

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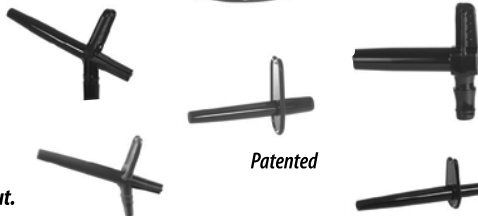
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Mark L. Isselhardt, *Maple Specialist*
University of Vermont Extension
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Could the sugar maples have broken bud during unusually warm January temperatures?

Trees like sugar or red maple (*Acer saccharum* and *Acer rubrum* respectively) living in cold climates protect themselves from winter damage through the process of dormancy. Dormancy is essentially a period of low metabolic designed so that just the most basic and essential processes are continued to keep living cells alive until more hospitable temperatures return. Trees have developed a sophisticated process to trigger the entry and exit from dormancy so as to avoid the damaging effects of freezing on delicate leaf tissue. The process of initiating spring bud break is not tied to a particular calendar date or for that matter reaching a particular temperature. The process is actually driven by balance of growth promoting and inhibiting chemicals. These chemicals are alternatively built up or broken down by the tree depending on the environmental stimulus. A period of cold temperatures is needed for a tree to both enter and exit dormancy. The amount of accumulated cold temperatures (also known as chilling) is inversely related to the amount of warming needed to break dormancy and varies by species. Said another way, if a dormant maple has not been exposed to very much cold weather it will take a greater amount of warm weather to break bud than if the same tree had experienced a longer amount

of cold weather. Generally speaking, sugar maple requires a greater amount of chilling than red maple. According to the Silvics of North America (Godman et. al. 1990), sugar maple grown in northern latitudes require the greatest amount of chilling hours before they can be released from true dormancy. An estimate of around 2500 hours of continuous chilling is offered. It is also thought that not all levels of cold contribute equally to the plants required total chilling requirement. Temperatures between 35-40F seem to be ideal. There is evidence to suggest that a latitudinal gradient exists relative to the chilling requirements of sugar maple.

Although technically not out of the question, a January sugar maple bud break in northern Vermont is so extremely unlikely as to make it practically impossible. Normally sugar maple bud break in northern Vermont occurs from late April through early May. The spring of 2012 serves as a good illustration of how well the dormancy system works in sugar maple. In the middle of March of 2012 Vermont saw five days of temperatures in the 70's and even 80 degrees in some places. Despite the extended period of record warmth, sugar maples did not immediately initiate bud break. Thanks to long term monitoring data from Vermont Department of Forest Parks and Recreation and the Forest Ecosystem Monitoring Cooperative (then Vermont Monitoring Cooperative) we know that sugar maples did experience earlier than average spring bud break in 2012 but not until the mid-

dle of April. By January in Vermont all trees growing in the forested environment would have lost their leaves and entered true dormancy, but the chilling requirements would not necessarily have been met.

We know that the phenology of bud development is extremely variable. Buds do not usually exit dormancy together in one discrete event even within the same individual let alone the same stand. If environmental conditions suitable for bud break were met January it is still only likely that a portion of the buds would break at any one time. This would leave another portion of the trees buds safely in dormancy and possibly outlasting the warm temperatures.

Southern Syrup Research Symposium

September 28 and 29
Summersville, WV

The maple world will turn south this September to focus its attention on the potential for syrup production in the Central Appalachians. With plenty of maple, as well as birch, walnut, sycamore, sorghum, and a relatively untapped market, the Central Appalachian and surrounding region is experiencing renewed interest and growth in the making of syrup. West Virginia organized a producers association 4 years ago and Kentucky just last fall.

The purpose of the Southern Syrup Research Symposium is to focus attention on the specific opportunities and challenges of sap and syrup production in this region. It is to bring together scientists, extension specialists and producers to learn and to discuss the issues.

Friday is dedicated to research presentations pertinent to the purpose of the Symposium. Researchers from The Proctor Maple Research Center, Cornell University, West Virginia University, Virginia Tech, Ohio State and others will be on the agenda. The goal is to learn about the sap and syrup research work being done, how it applies to environmental conditions in the Central Appalachians, and identify areas that need further exploration.

Saturday will be time for our maple experts to interact with sap and syrup producers. The day is structured around a series of panel discussions on topics to include: Sanitation, Agroforestry, Entrepreneurship and marketing, Sorghum, Technological Innovations, and Alternative Tree Saps. There will also be a session for producers to share their experiences as they grapple with issues pertinent to sap and syrup production in the region. Saturday also features a plenary session on climate change and syrup production.

Friday evening will feature a special West Virginia Welcome reception, including a square dance featuring a dance called "The Maple Syrup Real," choreographed especially for this event. The Symposium also features a Vendor Trade Show and a poster session featuring maple initiatives taking place in colleges and schools.

For more information, and to register go to: <http://www.syrupsymposium.com> or email Mike Rechlin: mike@future.edu

Bruce Gillilan

Bruce Gillilan has dedicated his lifetime to his love of the maple industry; professionally for over 40 years at Leader Evaporator, as a life-long producer and marketer of maple syrup in Fletcher, VT, and as a guest presenter all around North America. Dedicated to making the best maple syrup possible, whether it was at home or in the hundreds of maple operations he has been in to help producers improve their techniques.

Bruce's career started at Leader Evaporator Company in March of 1975 where he worked in the manufacturing plant. From there he would move into shipping, then to sales, and in 1991 was elected Vice President of Leader Evaporator, a position he still holds today. During his tenure at Lader Evaporator, Bruce started attending the NAMSC/IMSI annual meetings in Wausau, WI, October of 1980, and has been a steady presence ever since. Bruce was an associate member of the NAMSC from 2014-2016.

For most of the past 42 years during the sugaring season, each spring you would have a hard time to find Bruce at Leader Evaporator. That is because his passion is to help teach producers proper techniques in the sugar house. Add in the time spent teaching producers proper tubing installation techniques, R/O operation, and anything else maple related and you can understand how

he has accumulated well over 2 million miles traveling throughout the North American Maple Industry. He has donated his time to countless county, local, provincial and state organizations as a presenter in: Vermont, New York, New Hampshire, Maine, Massachusetts, Connecticut, Ohio, Pennsylvania, Wisconsin, Virginia, Ontario and New Brunswick.



As a producer, a deep commitment to quality drives the family operation. This tradition handed down from his father Cleon has led the family to great heights in syrup contests all over North America. Gillilan Family Maple has won Best of Show four times at the NAMSC/IMSI contests, and a total of 41 Best of Show in Syrup Contests throughout the

maple industry. In addition, 214 times his syrup has been either Best of Class or 2nd in Class.



Eric Randall

Eric A. Randall was born and raised on a western New York dairy and cash crops farm and comes from a family with a long history of sugar-making in the region. The family has recorded documentation of maple syrup manufacture dating to 1848. Following his graduation from Letchworth CS in 1964, he matriculated at SUNY-Oswego and completed a BS Biology program in three years and then commenced a graduate program of study in Botany at The Pennsylvania State University. He earned a PhD in Botany in 1973 followed by an academic appointment in the Department of Biology at SUNY-Buffalo State. This teaching/research appointment included an extensive teaching obligation as well as an expectation and opportunities for externally funded research. A plant taxonomist/anatomist by training, Dr. Randall taught, authored or reconstructed nearly two dozen plant science and forest botany courses at graduate and undergraduate levels during his twenty five year tenure at BuffaloState. His research led to a sizable herbarium (preserved plant collections of nearly 200,000 specimens); a significant forensic botany collection; dendrology, wood, and forestry experimentation projects relating to maple syrup production and expansion of tissue culture of sweet trees. Ironically, one of the original (1940's Josh Cope, Cornell) sweet trees was on the family



farm and has served as a bud source for grafted trees now in his plantation in Alexander, NY. Nearly thirty years ago Eric was awarded a NAMSC Research Council grant coupled with other funding opportunities, to study the impact of ultrafiltration of maple sap prior to separation/concentration by reverse osmosis. Much of that early work is now incorporated in the prefiltering of sap used by the industry. Dr. Randall has been session presenter, keynote speaker, panelist or moderator at maple meetings, field days, specialists meetings for over four decades.

Eric has served as member, director and President of Local (Wyoming County Maple Producers), State (New York State Maple Producers Assn.), National and International Maple bodies. He represented the 750 members of the New York State Maple Producers as Director to the International Maple Syrup Institute for nearly twenty years and then became New York's Director to the North American Maple Syrup Council. He recently completed a two year term as President of the Council.

Academically, he attained the rank of Professor, served as Chair of the Department of Biology, Director of the Great Lakes Center for Environmental research, was Associate Dean and Interim Dean of the College of Natural

Randall continued on page 32

Randall: continued from page 23

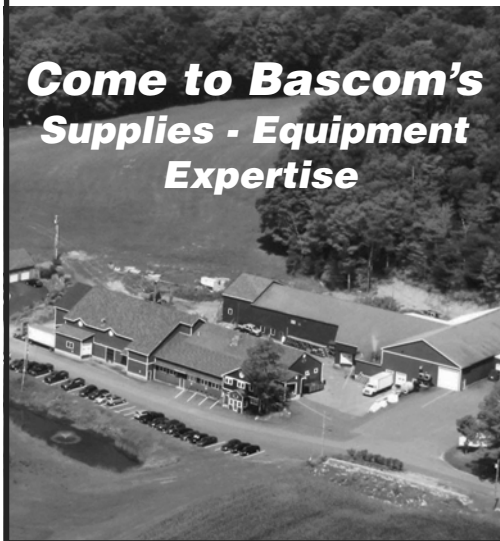
and Social Sciences before retiring from the SUNY system in 1997. After a few hours of retirement, he became Dean of Science, Management and Technology at Edinboro University of Pennsylvania, a position he held until retirement fourteen years later. Outside the academy, Eric served six years as one of the nine member US Army Corps of Engineers Environmental Advisory Board, a decade on the bench as an elected Justice in the Town of Darien, NY; a decade as member and President of the Alexander CS Board of Education, and past President of the Cornell Cooperative Extension Association of Genesee County. He currently serves as a consultant to the US Department of the Interior, Federal Invasive Species Council, conducts research on invasive plant species within the western Finger

Lakes region of New York and has won a competitive grant for monitoring/detecting aquatic invasive species by ROV/AUV instrumentation.

Eric and Eleanor Randall operate a 3200 tap maple operation on two farms in Genesee and Wyoming Counties, NY. They and ten fellow sugarmakers were the architects of the New York Maple Weekend program started twenty three years ago. They annually host guests at their picturesque facility and frequently "appear" on newscasts, advertisements for maple and "the" weekend because of their educational program, artifacts from the family's past and their iconic 1928 Baltimore and Ohio caboose near the sugarhouse. Randall's Maple Products participate under the New York State "Grown and Certified Program" and market all of their maple products at their farmgate.

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Are You Coming to New Hampshire?

Don't miss the big event, October 26-29, 2018. The NH Maple Producers Association is hosting this year's annual meetings of the North American Maple Syrup Council & International Maple Syrup Institute in Concord, New Hampshire. Hundreds of maple producers and suppliers from across North America will gather to share ideas and show some of the latest equipment available.

Our planning committee has been working for two years to ensure this convention will be fun and educational. It will be held at the beautiful Grapponne Conference Center at the Marriott Hotel. Comfortable hotel rooms are available at the Marriott or other nearby hotels, and should be reserved soon.

The NAMSC & IMSI meetings will update you on the most recent progress of these two organizations that protect and support the maple industry. The technical sessions will inform and motivate you to make your maple operation more productive and efficient. These sessions are still in the planning stages, but will be conducted by some of the world experts on maple production. More information will be available soon.

We will be offering bus tours to fascinating places in the area, such as: Pleasant View Gardens, where they raise "Proven Winners" plants; the Bolduc Farm, where they've been tapping trees since 1779; and Windswept Maples, where high-quality maple syrup is made. Then there's Sanborn Mills Farm, which teaches sustainable agriculture and uses a sawmill, grist mill and blacksmith shop. We may also

visit the NH International Speedway and museum. We'll visit the Anheuser-Bush Brewery, Moonlight Meadery and Mac's Apples. Companion tours are being arranged for Shaker Village, NH Telephone Museum and Mt. Kearsarge Indian Museum. Not all of these tours are carved in stone yet, so there may be a change or two in the near future.

Bring your best maple syrup, cream and sugar to enter into the international contest. Who knows, you may win "best of show!" If you enjoy photography, enter your best photo of a sugarbush scene, maple people on the job or creative maple photography. We will also hold a silent auction and have some wonderful raffle items.

To register for the convention or learn more about the tours and contests, go to nhmapleproducers.com and click on "2018 NAMSC & IMSI Conference," event registration, and download the registration form.

New Hampshire's maple producers are proud to host this annual meeting and hope you will come so you can learn about the latest innovations in maple production, check out the new equipment and visit some of the fascinating places that make NH such a memorable place to visit. We're looking forward to seeing you in October!



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The Season is Over: Now, How Will You Sell Your Syrup?

Olga Peters

Any sugarmaker will tell you that it's a slippery slope from 'just hanging a few buckets' as a hobby, to buying lots of shiny equipment and not getting a full night of sleep from February through April. Intentionally turning a backyard sugar operation into a business, however, requires thought and planning.

And no two sugarmakers follow the exact same path. For some, their business grows slowly, one weekend farmers market at a time, and they prefer to stay small. Others build their backyard operations into wholesale businesses that keep them busy year-round. Some enjoy selling directly to their customers. And others would rather focus on production, and let established retailers take care of the rest.

These snapshots of four sugaring enterprises illustrate just a few of those successful models.

Matt's Maple Syrup Marlboro, VT

As with many New England restaurants, wait staff at the popular Brattleboro eatery, the Chelsea Royal Diner, offer diners a choice: table syrup, or for an extra fee, real maple syrup with their waffles or pancakes. A flyer on the door notifies customers that they can also purchase jugs of Matt's Maple Syrup on the premises.

"The waitresses sell the syrup as a favor," says sugarmaker Dave Matt. The jugs aren't part of the restaurant's inventory, he explains. The wait staff

keep a few jugs on hand for when customers ask.

The Chelsea Royal is the only off-farm outlet where Matt sells his syrup. He also sells it from his farm to adventurous visitors who turn off southern Vermont's twisty Route 9 after spotting Matt's sign. Repeat customers even drive from as far away as New Hampshire, he says.

For a few years, Matt invested in a state-sanctioned road sign that the Agency of Transportation installed on Route 9. Matt gave the sign up, however. He felt it cost too much and didn't bring in as many visitors as his own sign at the end of his road.

Matt has approximately 1,800 taps. In an average season, the farm produces 450 to 500 gallons of syrup. Out of preference, he does not use reverse osmosis. His son Eric helps with a lot of the sugaring. Other family members help when their schedules allow.

And Matt is fine with the size of his sugaring operation. He has no desire to focus on maple all year. Matt also hays and sells firewood. He enjoys the variety, he says.

"I'm great at making syrup," Matt says of his one-restaurant contract. "I'm not so great at marketing."

Vermont's maple market is saturated, Matt continued. He says he would feel odd bringing a sample of his syrup to a store or restaurant that is already

Selling continued on page 37

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Selling: continued from page 35

selling his neighbor's syrup. "I don't want to step on anyone's toes," he says.

**Thurston and Peters Sugarhouse, LLC
West Newfield, ME**

"I don't want to be a robot filling orders all day for people I haven't met," says Debi Hartford who, with her husband Harry, owns Thurston and Peters Sugarhouse in Newfield, Maine. Their operation includes 2,100 taps, a sugarhouse, a small shop, and an ice-cream stand.

Almost all of the Hartfords' products are sold on the farm, and their store carries a variety of other retail items, like pancake mixes, jellies, honey, and crafts.

Debi and Harry are retired teachers, and education courses through every aspect of the couple's business. They design their business to be people-oriented, and they make a point of educating customers on what it takes to boil sap into maple syrup. They discuss the product's nutritional features. They also share the importance of forest health with visitors. Debi jokes that she is the quick "just the facts m'am" kind of tour guide. Harry provides long tours with a lot of detail.

Debi says Thurston and Peters will

never become a "point-and-click" business. Nor do they have aspirations of selling their syrup in bulk. Neither business model is personal enough for them.

Most of their customers come to the farm for the maple soft-serve ice cream, says Debi. She estimates 90 percent of their business is on the farm. Debi also makes a popular soft-serve maple pie. They are in the process of creating a small educational installation in a second sugarhouse.

Debi notes that they planned very little of their business. At least not in the traditional way. They haven't sat

down and created long-term outlooks or business plans. Instead, the company has grown organically. Debi says, the successful enterprises like the soft-serve maple ice cream, "just happened."

So why is the couple successful

and happy with Thurston and Peters?

According to Debi, they've always been honest with themselves. Honest about where they felt willing to put their effort. Honest about how they wanted to spend their time. The couple knew from the start that they wanted to teach and work with people.



"Provide packaging that looks professional," says Stu Peterson of Camp Aquila in Dent, Minnesota. "Package in glass where your quality product can be seen and use an attractive/unique label."

Selling: continued from page 37

Debi recommends the same honesty to prospective entrepreneurs. "Work around your passion," she says. Customers know when you're not having fun.

**Stu and Corinne Peterson
Camp Aquila, Dent, MN**

Stu and Corinne Peterson operate Camp Aquila in Minnesota. They have 1,250 taps, and the business is a size that they can manage with just the two of them. Stu says he's not interested in getting bigger than that.

"Everything is in balance," he says.

Stu describes Minnesota as a "syrup deficit state." The state rests at the westernmost edge of sugar maple trees' habitat, and maple syrup is a "demand waiting to be met," he says. Compared to a state like Vermont where the maple industry is deep and commercial, Minnesota has a "boutique" or niche industry, he says.

Stu prefers the wholesale market to selling retail. The farm is hard to find with roads that are impassible for something like a school bus, he says. They sell approximately 90 percent of their syrup wholesale to local stores and restaurants.

Stu tapped his first sugar maples in 2000. By 2003 he obtained the necessary licenses to sell his syrup, and later received organic certification. Having these licenses made selling to approximately 15 to 20 stores in the area much easier. He explained that the maple market is small in Minnesota, and so is customers' understanding of the product. The licenses helped legitimize

Camp Aquila's syrup for any nervous retail outlets.

That, and Stu could look business owners in the eye and say Camp Aquila was a locally-made and -sourced product. He provided stores with rack cards explaining that the syrup was 100 percent local.

Most of Stu's neighbors are backyard hobbyists. For the first three years that Peterson harvested maple, he boiled with a friend just for fun. He has continued to learn from fellow sugarmakers through the

Minnesota Syrup Producers' Association.

"It's a hobby that got way out of control," Stu says about his love for maple.

Stu's transition into a sugarmaker started when a local forester surveyed what was then the couple's then second home. The tree doctor told Peterson and his wife that their land would be



"Quality products sell themselves!" says Michael Bryant of Hilltop Boilers Maple Syrup in West Newfield, Maine.

perfect for a sugarbush.

In 2000, Stu decided to take early retirement from his job as a commercial lender specializing in the agricultural industry. He tapped 50 trees that year.

His initial retail sales did not come easily. Maple might be in high demand in Minnesota. But, that doesn't mean that customers or retailers understood it. Stu says he spent a number of his early days educating people about maple syrup.

Stu reminds new entrepreneurs that it's important to produce a quality product. And, produce it consistently.

Stu says Camp Aquila has a good reputation. So good that he dropped the organic certificate recently. He hasn't changed how it produces the syrup, but simply saves the \$300 inspection fee.

Stu offers what he calls his "Lucky Seven" pieces of advice for new sugar-makers:

1. Be sure you are confident in your ability to produce a consistent, quality product using best practices and using all food grade equipment. Your product is your reputation. Don't oversell your ability to supply.
2. Be sure you are licensed and inspected according to state requirements.
3. Start locally and establish close relationships with retailers and restaurants who appreciate and promote locally produced products. Build a relationship with local buyers. That is your niche. Build out from there as conditions permit. Promote what sets your operation apart from the rest of the pack.

Selling continued on page 40

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Selling: continued from page 39

4. Build your reputation as a consistent reliable supplier of quality pure maple syrup products. Seek out press interviews and publicity. Get involved in local events and celebrations.
5. Provide packaging that looks professional. Package in glass where your quality product can be seen and use an attractive/unique label that meets all state and federal requirements. This will set you apart from those who package in plastic using generic containers.
6. Selling to the public is a business with risks. Separate your business from your personal finances by forming a corporation or LLC. Why put everything you own at risk? A legitimate business operation can also provide some useful tax deductions. And be sure you have sufficient general and

product liability insurance. Some buyers will want proof of insurance before they will carry your product.

7. Keep good records for analyzing your business and for tax purposes. These records will help you understand which customers, product sizes, packaging and value-added products are worth the effort.

**Hilltop Boilers
West Newfield, ME**

Michael Bryant started Hilltop Boilers with his brother Mark in 1984. The then middle-school aged boys learned how to sugar from their grandfathers.

More than three decades later the brothers are still 50-50 owners. Michael tends to the marketing and finance side of the business while Mark deals mostly with maintaining the operation's equipment.



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Hilltop is a four-seasons working farm. Along with the family's maple syrup and baked goods, the farm also sells hay, tilling services, firewood, and custom woodworking services with a focus on cabinetry.

Michael says in the past two to four years, he has pushed to grow the maple business. According to him, the family's children are old enough to participate in Hilltop. Bryant says he sees the business as the Bryant kids' future.

Hilltop's production has grown substantially. Last winter, Hilltop built a new sugarhouse. This summer the family hopes to complete their farm store. Michael says Hilltop taps trees on land owned by 41 different people.

"We're working hard to grow," he says.

Some of the business growth has come through planning. Some through chance, Michael says.

Early on, Michael decided to invest in customer service. "In 2018, people make decisions fast." A lot of people like supporting farmers, he says, but they'll go to Amazon if they can get something faster. So Michael decided to sell Hilltop products through the farm's website. He likes that he can take orders and ship syrup "around the clock." Free shipping on orders over \$50.00 is a big draw, he says.

Hilltop also sells its syrup in Christmas Tree Shops across Maine. Hilltop won the contract after a handful of Christmas Tree Shop employees fell in love with its syrup. The employees rallied their managers and requested the shop sell Hilltop.

Michael advises fledgling entrepreneurs to look beyond their local maple association for training and network-

ing. The maple associations know maple, he says. But opportunities to learn broader marketing, financing, and other business skills abound. He recommends signing up for every non-maple marketing course an entrepreneur can find.

As an example, Michael says his wife recently attended the Maine Governor's Tourism Conference. The event opened "massive doors" for Hilltop, Michael continued. Opening similar doors at a maple convention can prove sticky, since the other attendees are also the competition.

It's easy to get stuck in marketing to people similar to one's self, Michael says. Remember, maple famers are not the average customer.

Local Chambers of Commerce are good resources, adds Michael.

Michael credits success to diligence and producing a quality product.

No one with questions leaves the farm or a tasting without a jug of syrup, Michael says. If someone stops by the farm asking about wedding favors, for example, then they leave with a sample.

"A quality product will grow a business," Michael says.

This article is the first in a series devoted to marketing and selling maple products. Look for more articles in pcoming issues, and on the next few pages.

Sales Advice From a Business “Hatchery”

Olga Peters

Businesses grow and sustain on repeat customers, says Jim Verzino.

Verzino is the director and entrepreneur-in-residence at Windham Grows, an agricultural and food business accelerator located in Brattleboro, Vermont. The program works with entrepreneurs who want to grow their existing businesses, who built their businesses to where they’re working full time and have at least one or two employees and need additional resources and mentorship.

Verzino spent way too much time perfecting his website and not enough time building a customer base in his early days as a new entrepreneur, he says.

A website is important, but “people don’t realize the asset they have in a fan base,” Verzino says.

For example, if a sugarmaker travels to multiple farmers markets, they can build future retail contracts by asking repeat customers to recommend them to the customers’ favorite stores.

Verzino recommends sugarmakers plan their business and finances before making their first sale. What type of business do they want? Will they sell to their local general stores, or create a bulk maple business?

Entrepreneurs also need to insert buffers into their business. “Assume everything will take more time and more money than you expect,” he says.

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New entrepreneurs will make mistakes and miscalculations, Verzino says. Keeping risks low, practicing good money management, and not investing in new markets or equipment until there is demand will give sugar-makers the breathing room to make mistakes. In other words, make enough money to support the business before quitting any other jobs.

Verzino says entrepreneurs should ask themselves a number of questions early in their process:

1. Do they have the financial space to grow the business? This includes calculating all expenses, from the monthly mortgage, to babysitting costs, to groceries, to purchasing new bottles for the maple syrup, to printing brochures.
2. Can they commit the time? The business must fit an entrepreneur's personality, but must also fit with other

commitments to friends and family.

3. Do they have their family's support?
4. Safety, safety, safety. Verzino recommends talking first with their local town offices to find out if there are any ordinances governing food businesses. Then call their local state agencies of agriculture.
5. Build a business strategy with a rough timeline of actions and results. If the business will consist of selling to the local general store, then make a list of stores, who to contact at each store, and the date to make the call. If the business will become more complex than that, then so will the business strategy.
6. Develop a marketing plan. How will their syrup stand out from everyone else's? Will it be a different bottle? A colorful label? A compelling story behind the syrup? A unique flavor?

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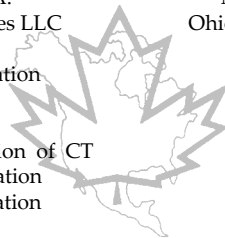
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Sunrise Metal Shop
VT Maple Sugar Makers' Association
WI Maple Syrup Producers Association

Contributors

David Cioffi
NY State Maple Foundation
Ohio Maple Producers Association
Mark Lupton
Karen Haigh Memorial



Business Advice From a Maple Specialist

Olga Peters

Reverse osmosis changed the maple industry, says New York State Maple Specialist Stephen Childs. It helped make maple profitable.

That doesn't mean people shouldn't put hours of paper planning into their business before they tap their first tree, he says. "Educate yourself ahead of time," says Childs.

"Understand what it is you like to do," he says. Don't like people? Then, consider selling syrup wholesale, he says. Really love people and nurturing relationships? Then retail is the path.

Once that decision has been made, it's time to paper plan, Childs says. Study the local maple market. Explore who will do what work, when it will get done, where, and what is the likely outcome, he adds.

For example, before setting up a booth at the local farmers' market, visit the market. Talk to the vendors about the market's ups and downs. What does an average day of sales look like? Chat with visitors. Ask people what they think of maple. How much do they buy?

Next, discover how well potential customers, and the target area know about maple.

"There are many little details," Childs says.

Some states don't understand that maple is boiled even, he says. This may influence the type of licenses a sugar maker needs to sell within different locations. Checking regulations is especially important for sugar makers living in a cross-boarder region.

"This [upfront work] can save people a lot of investment and time," Childs says.

What if all the best-laid plans fall apart? Childs says many things can waylay a new, or established business. The market can change or an owner falls ill. If this happens it's time to re-evaluate.

Childs sees value-added products as the next trend in maple. Cornell University, for example, is experimenting with finding inexpensive ways to use maple as a sweetener in soft drinks.

"It's the most natural and most healthy sweetener," he says. "Maple can step above the crowd."

Cornell University's maple program offers multiple resources. To learn more, visit: <http://blogs.cornell.edu/cornellmaple/>

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Additional Crop Reports

West Virginia

Many producers started tapping around the middle of January despite the cold temperatures that had started in November. Some producers in the lower elevations saw good runs during the last two weeks of January and produced a significant amount of maple syrup. Many days during these two weeks were perfect sap temperatures, but frost in the ground hindered sap flows until the last week of the month.

February ushered in the fourth month in a row of cold temperatures with some days having perfect temperatures for sap flow. The temperatures from the already colder than normal winter pointed to a long and promising season. By the 10th of the month, nearly everyone was fully tapped and seeing some good sap flows. Even in the cold-

er areas, there was enough warmup some days for a few hours of sap flow most days. Then came the third week of February, which ushered in seven straight days with temperature highs in the 60's and 70's for most of the state, with some producers seeing temperatures as high as 85 degrees.

Some years, many producers are still frozen up the third week of February with little or no syrup being produced, but this was the second year in a row that we experienced such a dramatic warm up during that week. This proved to be a death blow for the season for most producers in elevations below 1,200 feet. Producers in the higher elevations let sap run on the ground and many re-drilled slightly deeper tapholes to clean all the yeast out of the tap holes and spouts.

West Virginia: continued on page 46

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West Virginia: continued from page 45

After that week, temperatures went back to below normal and remained so until nearly the middle of April, with March proving to be one of the coldest on record. Producers in the lower elevations with warmer sugarbushes only made 25% to 50% of a normal crop. Most producers in the colder areas and elevations about 2,500 feet had a decent season with 70% to 100% of a normal crop. Overall, the statewide average was about 60% of an average crop. Producers that were vigilant in the woods fixing leaks and maintaining high vacuum levels fared the best. If not for the one week in February, West Virginia would have likely had a record crop with producers being able to make syrup up to 10 weeks. Despite the week of extreme temperatures, three of the states top six producers in 2018 were able to stretch the season out to approximately eight weeks by re-drilling slightly deeper and this increased the sap flow tremendously during the latter part of the season.

Vermont

Perhaps the single best word to describe the 2018 Vermont season was... Cold. It seems like much of the concern about temperature impacting yields has centered around abnormally high temperatures, but this season many producers reported below average temperatures contributing to less than ideal sap flow. Few producers reported seeing any large sap runs or sap flow rates that tested the capacity of the operation. Most sugarmakers characterized the season as having slow but steady runs, with at least two prolonged freezes.

The season began for most producers in the first two weeks of February.

There was a long freeze in the middle of March that severely limited sap collection. The final stage of the season did not include a significant period of high temperature, which allowed some sugar makers in colder areas to make up ground on production.

While some producers saw sap with lower than average sweetness, this did not appear to be the case statewide. The cold weather not only had an impact on sap flow but may have resulted in syrup a bit lighter than average in color by keeping sap cool and relatively free of microbial contamination.

There were no reports of significant or widespread problems with syrup flavor this season. Many producers reported that it was a lack of sufficient sap flow that determined when the season ended and not the onset of buddy off-flavor.

Most sugarhouses finished producing syrup in the last week of April. In terms of overall syrup yield it appears that most producers were seeing totals either side of long-term or expected average levels. Some producers were just shy of expected totals (85% of expected was a common number used). Other producers reported exceeding expected yields by 10-15%.

Quebec

The Federation of Quebec Maple Syrup Producers reports that overall production for the Province declined by 22% from the record-setting 2017 season. Total production was 118 million pounds of maple syrup from 46.8 million taps.

International Maple Syrup Institute News

Dave Chapeskie R.P.F. Executive Director, IMSI

The Board of Directors Meeting of the International Maple Syrup Institute (IMSI) was held at the American Maple Museum in Croghan, NY on Friday, May 11.

Maple Syrup Supply & Demand

Growth in maple syrup production capacity in the U.S. is estimated at one million taps. A planned expansion by five million taps is underway in Quebec over a two-year period. Production capacity in Ontario and New Brunswick is growing by up to 5-7% each year.

Going into the 2018 production season overall supply was still very good, with about 80 million pounds of maple syrup in the Federation's strategic reserve. Also, some packers/processors have held inventory surplus to meet their needs over the past two years. It is expected that the smaller crop in 2018 will lead to a drawdown both on the strategic reserve and on other inventories. This should lead to some re-balancing of supply and demand in advance of the 2019 season. The strategic reserve is meant to deal with annual crop fluctuations such as this, and all indications are that the industry will be able to meet demand in the upcoming sales year.

An interesting fact is that organic maple syrup is now 36% of the intake into the strategic reserve, but demand for organic syrup has leveled off. It is not sure what that may mean in the sales season ahead. It is possible that some producers may drop their certi-

fication because of the current demand situation.

Everyone reported that sales are strong, with up to an 11% increase in this quarter.

Quality Assurance Roundtable Discussion

The IMSI table is a collection of some of the most astute maple industry leaders. At times, we conduct a round table discussion on relevant issues and brainstorm potential solutions. Everyone is asked to provide feedback and some common ground on quality issues is shared. A few items that we need to pay attention to in the near and longer term:

- There is still "alternate equipment" that producers are using that is not food grade and is makeshift in nature. This sends an image that maple production can be done with inferior supplies and "jury-rigged" to meet the situation. Often, these show up on You Tube as the sure fire way to make maple syrup. It damages the industry's credibility and renders it visually as a simple "Mickey Mouse" procedure.
- What to do to manage RO water as it is expelled from the RO?
- There was broad consensus regarding the need to continue to provide education to small producers and other producers as needed on syrup quality, lead elimination, and the im-



IMSI: continued on page 48

IMSI: continued from page 47

portance of utilizing proper equipment

- There should continue to be concerted effort in the development and execution of 3rd party certification programs. Some argue that raising awareness and education need to be complemented by self-regulation
- There is evidence that off-flavored syrups are entering retail markets. This is potentially very damaging to the maple syrup industry.
- There is a need for additional train-

ing in the recognition of off-flavored syrups, but of equal importance is recognition of good quality syrups

- Blending of off-flavored syrup with good flavored syrup is discouraged
- Use less harsh chemicals in cleaning of RO's and tubing.
- When new tubing is installed, do not collect first runs of sap due to the potential for added off-flavors in the syrup
- Utilize defoamers that are acceptable and do not potentially contaminate maple syrup.



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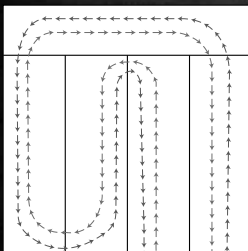
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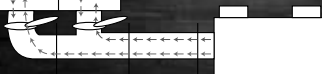
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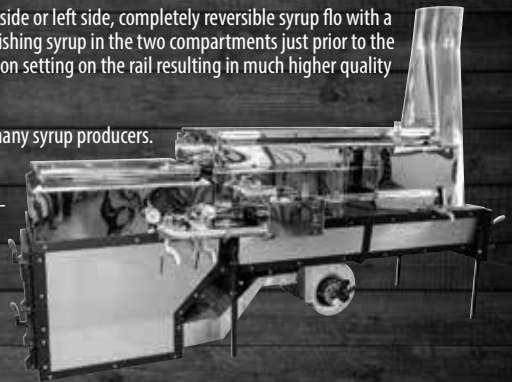
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NAMSC Weighs in on “Added Sugars” Issue

The United States Food and Drug Administration has proposed new nutrition label requirements for pure maple products that NAMSC and other industry leaders are concerned will harm our industry. Below is the text of a letter submitted to the FDA by NAMSC on behalf of our members:

Dear Commissioner Gottlieb:

The North American Maple Syrup Council is pleased to offer these comments on docket FDA-2018-D-0075, “The Declaration of Added Sugars on Honey, Maple Syrup, and Certain Cranberry Products: Guidance for Industry.”

We write in opposition to the requirement that pure maple products include the “Added Sugars” line as required by the FDA Office of Nutrition, Labeling and Dietary Supplements regarding Nutrition Facts Label “Added Sugars” (21 CFR 101.9(c)(6)(iii)). This section requires the inclusion of “A statement of the number of grams of added sugars in a serving” on food labels.

While we welcome educating consumers by providing them with information about the foods they consume, this requirement would instead increase confusion by suggesting that pure maple syrup – a single-source product that by definition is a sweetener – has been adulterated through the addition of other sugars.

While we appreciate the FDA’s effort to address this concern through the proposed guidance, we feel that the suggested voluntary footnote to the label will only increase confusion, rather than lessen it. Consumer understanding of and appreciation for pure maple products depends upon consistency,

and having products that are identical under the FDA standards for maple syrup with differing labels will limit that understanding.

Our industry depends upon educated consumers, and consumers who seek out our products are typically looking for natural, minimally-processed, pure sweeteners. Any implication on the nutrition label that suggests that the product contains anything other than pure maple syrup would mislead consumers and could have a potentially devastating impact on our industry.

We propose an exemption for single-ingredient, pure maple products from the Added Sugar line requirement. The new nutrition labels will require, as the current one does, the total sugars per serving, and we feel that continuing to offer the information about our products in this manner adequately conveys the information the FDA is requiring on the new labels.

The North American Maple Syrup Council, founded in 1959, represents maple producer trade associations in 13 US states. We bring together industry leaders and affiliated groups to share common interests, experience and knowledge for the advancement and improvement of the maple syrup industry. Each year we fund research projects that improve the efficiency and quality of maple production, and support the thousands of farmers who carry on the uniquely American tradition of making pure maple syrup.

Thank you for the opportunity to offer these comments. We welcome any questions or requests for further information as you consider the final guidance.

North American Maple Syrup Council Research Fund

The NAMSC Research Fund funds research that supports and advances the maple industry. In recent years we have given tens of thousands of dollars to projects that have developed innovative practices and technologies, helped deepen our understanding of the science of sugarmaking, and promoted the products we all make.

You can make a difference!

Concerned about the future of the Maple Industry? Make a contribution to support the maple research we fund. One easy way is to pledge to send \$.01 per container to the NAMSC Research Fund. Grant recipients are announced at NAMSC Convention each October.

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The NAMSC Research Fund is a non-profit, volunteer committee of the North American Maple Syrup Council, Inc.

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The information needed for your legal documents is: North American Maple Syrup Council, PO Box 581, Simsbury, CT 06070.



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