Maple Syrup Digest

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Flavor of High-Brix Syrup
Annual Meeting Reports

The Newsletter of the North American Maple Syrup Council

MAPLE SYRUP DIGEST

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Greetings from your President

It is a great pleasure and an honour to represent and serve as the next president of the North American Maple Syrup Council. I would like to thank all the delegates and alternates for supporting me and giving me the opportunity to assist, guide and lead our organization into the next couple of years.

The maple industry runs deep in my family. If my great-great-grandfather, Arthur M. Briggs, could see the changes from the mid 1800's to 2017, I am sure he would truly be amazed at how the industry has changed and at what we have accomplished. Making maple syrup is certainly much different now than when he made it so long ago.

I have been involved in the maple industry for most of my life. As a young boy helping gather sap with a team of horses, watching the pans and thermometer while my father fired the arch, or eagerly helping stir the maple cream, spring was always the best time of year for me. Although for many years it was a seasonal experience on our farm, I eventually made maple a full time passion and career in 1998. Going into business with my father we expanded our maple syrup production and started full time, year round packing and distribution.

I then became involved with the New Brunswick Maple Syrup Council and became very active as the treasurer for many years. In 2002 I became the delegate for the Province of New Brunswick to the NAMSC, and have served since then as either delegate or alternate, only missing one conference. I have served on a number of NAMSC committees over the years, most recently the audit and nominating committees.

Our provincial association hired a full time executive director and then became the New Brunswick Maple Syrup Association. I served for many years as a director and for two years as president. I assisted our executive director in the organization of the international maple conference when we hosted it just a few years back, and also have helped organize and participate in a number of New Brunswick Maplefests.

I now own and operate, with my wife Sherry, two maple businesses. One business is retail, open all year round, selling our full line of maple products and many other local food and gourmet items. The other maple business we operate focuses on bottling, manufacturing and distribution to our wholesale accounts. We are also in our fifth year as a Lapierre Maple Equipment dealer.

I just recently returned from the annual conference in Lévis Quebec. A great many of us gathered for meetings and discussions from NAMSC and from the International Maple Syrup Institute. Over the five days, ideas were shared, concerns were heard, maple presentations were made, the latest equipment was dis-

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played, sugarhouse tours were enjoyed, friendships were renewed and new ones were made. All this was put together by our great friends from the Citadelle maple cooperative and the maple producers from Quebec. A huge thank you and congratulations on a conference well done!

I would like to also congratulate and thank all those who participated and won awards in this year's annual maple products and maple photo contest. There were a lot of entries and I am sure it was not an easy decision to choose the best. Please keep on entering, it makes for a better contest.

Congratulations go out to two very special individuals. First I congratulate Dr. John Stockie, who recieved the Richard G. Haas Distinguished Service Award for his extensive and valued research in the maple industry. With a background in Mathematics he has helped us to better understand the dynamics of sap flow within the maple tree. Congratulations, John, for receiving this award of appreciation from the North American Maple Syrup Council.

Also, tremendous gratitude and congratulations go to a very special friend and colleague in the industry, Cécile Brassard Pichette, recipient of the NAMSC Special Recognition Award. She has been a great supporter to the industry with her many years of service to the Maple Cooperative at Citadelle. She is a past president of NAMSC and continues to serve as the delegate from Quebec. Thank you Cécile it is an honour and pleasure working with you over the years. Well deserved to both these individuals.

Special congratulations, also, to this year's inductees to the Maple Hall of Fame, Bruce Gillilan from Vermont and Dr. Eric Randall from New York. Bruce has an extensive background in the maple industry, both as a producer at his family sugary and with Leader Evaporator. Bruce has truly left his mark on the maple industry and we are very thankful for his positive impact towards it.

Eric has had a passion for maple for a very long time. His background as a botanist combined with his love for maple has taken Eric far and wide in the maple industry. He has spoken and presented his knowledge of the industry to many of us over the years. His continued efforts with research and education have brought our industry to a place where we are now out-producing what we can sell. I want to thank Eric again for the time and energy he puts forth into this Council and I am truly blessed and appreciative of his advice and guidance as we move forward. I am most grateful to him for supporting me as his successor and honoured to be able to follow in such great footsteps. Thank you again and congratulations my friend – well deserved!

As I wrap up my first letter I am mindful to the fact that there is much work to do at the council level. We will be continuing with conference calls and hopefully getting some of the committees more active in the coming months.

The holiday season is now upon us and sugaring will not be far off.

In this issue...

Please continue to spread the word of the Council and feel free to join the Alliance program at any time. Your donations are very much appreciated as education and research needs to continue.

The words I heard most at our annual meetings were "We are out-producing what we can sell." We strive to be great at what we do. We are great at making maple syrup; we now have to be even better at selling it. There is much talk around that we need to start marketing our efforts more and more. If anyone has ideas or suggestions on how we can better sell our products please share with any one of us on the Council.

All the best to you and your families this holiday season and I wish you all the best in the sugaring season to come.

Cheers,
David Briggs, President, NAMSC

Cover photo: Frank Merriman, Gingerich Bros Maple, Chardon, OH.

Research: RO and flavor

Assessment of the Flavor of Syrup Produced with High-Brix RO Systems

Abby K. van den Berg and Timothy D. Perkins,
University of Vermont Proctor Maple Research Center

Concentrating sap with reverse osmosis (RO) substantially increases the efficiency and profitability of processing maple sap into syrup by reducing the amount of fuel and time required to complete concentration to syrup density in the evaporator, with gains proportional to the level of sap pre-concentration (Figure 1, van den Berg *et al.* 2011). Because most flavor development in maple syrup occurs through nonenzymatic browning reactions as sap is processed with heat in the evaporator, it has often been speculated that reduced evaporator processing time resulting from the use of RO might also result in perceptible impacts on syrup flavor. However, a series of controlled experiments conducted at the University of Vermont Proctor Maple Research Center using the same sap processed to different levels with RO determined that concentrating sap up to 21.5% prior to boiling in standard maple evaporators had no substantive effects on syrup composition or flavor (van den Berg *et al.* 2011, 2012, 2014, and 2015). For example, syrup produced simultaneously from raw sap and the same sap that had been concentrated to 8% with RO contained similar quantities of flavor compounds, and the flavor of the syrup was indistinguishable by panelists in sensory evaluation experiments (van den Berg *et al.* 2014). The same results were observed in syrup produced simultaneously with the same sap concentrated to 8 and 21.5% (van den Berg *et al.* 2012).

RO systems capable of concentrating maple sap to 30-40% (hereafter referred to as "High-Brix") have recently been developed, and could provide substan-

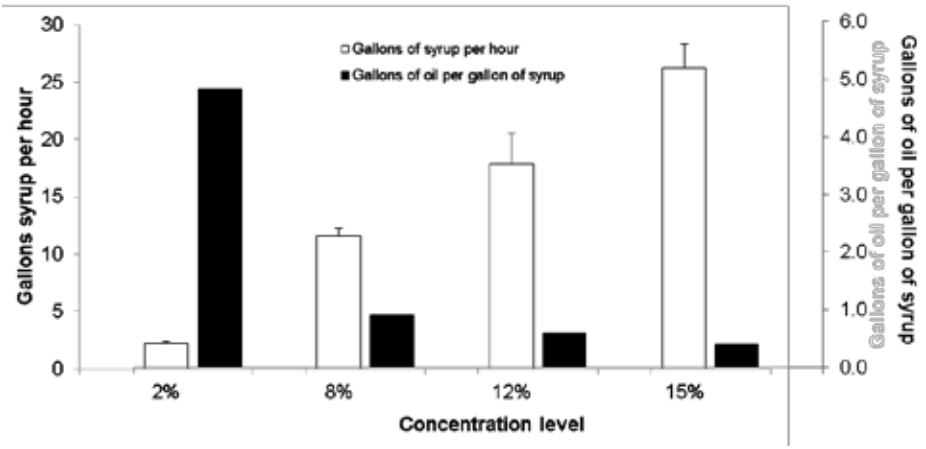

Figure 1. Rate of syrup production per hour and fuel consumed per gallon of syrup produced in 3 x 10' oil-fueled evaporators processing sap at 4 different concentrations of starting sap material: 2, 8, 12, and 15%.

tial additional gains in processing and time efficiency. However, the greater level of sap pre-concentration and resulting reductions in thermal processing time resurrect questions about potential impacts on the syrup produced, particularly with respect to flavor. Thus, the overall objective of this study was to determine if the production of syrup with High-Brix systems significantly impacts syrup flavor. Since previous controlled experiments found no substantive effects on syrup flavor with sap pre-concentration up to 21.5%, sensory experiments with syrup produced by High-Brix systems were chosen as a first step to address the question of potential impacts of these systems on syrup flavor. The most essential information to determine initially was whether the flavor of syrup produced with these systems is appealing and liked, and characteristic of the flavor of pure maple syrup. Sensory experiments were conducted to address these questions and thus assess the potential impacts of producing syrup with High-Brix systems.

Materials and Methods

Syrup samples were obtained from six producers that used High-Brix Systems (Lapierre Equipment "Hyper-Brix" or H2O Innovation "Super-Concentrator") during the 2016 production season. Each producer was asked to provide samples that represented the early, middle, and late portions of their production season. Once obtained, the color of each sample was measured as percent light transmittance at 560nm with a spectrophotometer (Thermo-Fisher Spectronic Genesys 8), and density with a digital refractometer (Misco Palm Abbe PA202). Other pertinent information about each sample, including production date, location, and

High-Brix: continued on page 10

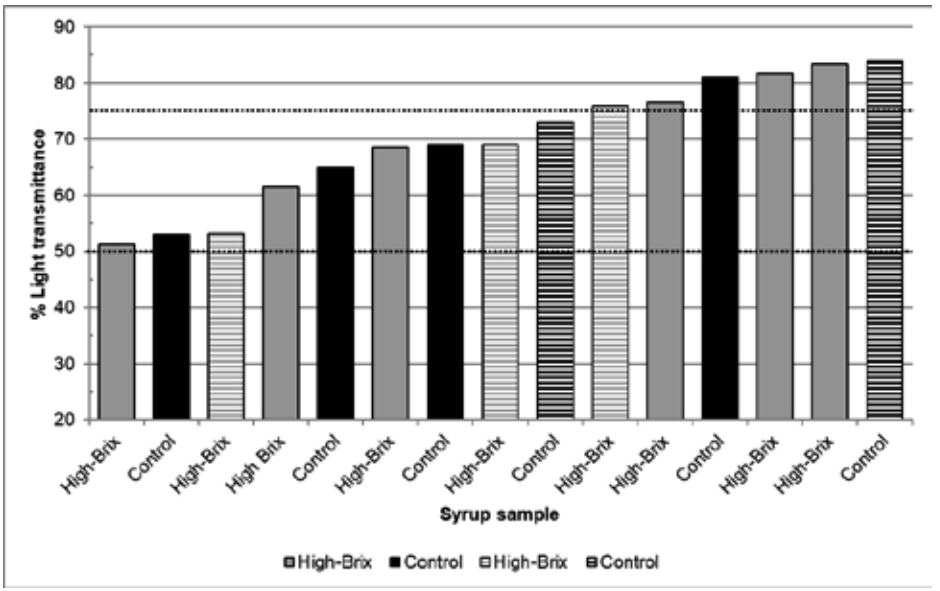

Figure 2. Light transmittance and production type of syrup samples evaluated in sensory experiments. Dotted lines demarcate the light transmittance values for syrup grades (≥75% = Golden Delicate, 50% - 74.9% = Amber Rich). Solid bars indicate syrup produced in certified organic operations, and striped bars indicate conventionally-produced syrup.

High-Brix: continued from page 9
whether it was produced in a certified organic or conventional operation, was also recorded. Nine of these samples were selected for sensory experiments. Once selected, a set of syrup samples with a similar range of color and production type (organic or conventional) that were produced with standard RO systems (e.g. 25% or lower) during the 2016 season were obtained (Figure 2). Syrup produced with other processing technologies that could potentially impact flavor, such as air injection, were excluded. All samples were screened for flavor defects and appropriate density prior to sensory experiments.

Sensory experiments were conducted to assess the overall acceptance or "liking" of syrup produced with High-Brix systems, as well as whether the flavor of High-Brix syrup was perceived as being characteristic of pure maple syrup. All sensory experiment procedures, design, and analyses were conducted following standard methodology for acceptance and affective testing as described by Meilgaard et al. (2006) and Lawless and Heymann (2010). For these experiments, each of the nine High-Brix and six Control samples was assigned a random, 3-digit code. Forty-six healthy, non-smokers who liked pure maple syrup were recruited and participated in the experiments in one of four sessions (Table 1). Each panelist was presented all 15 samples in randomized order in opaque containers to eliminate the potential influence of syrup color on flavor perception. Panelists were instructed to taste each sample and answer the following two questions about their perception of the syrup's overall flavor:

1) How much do you like or dislike the overall flavor of this syrup? Panelists were asked to choose a response from a nine-point verbally-anchored hedonic scale, from "Dislike extremely" to "Like extremely"; and

2) Is the flavor of this syrup characteristic of pure maple syrup? Panelists were asked to choose a response from a seven-point verbally-anchored Likert agreement scale, from "Entirely disagree" to "Entirely agree".

Panelists were instructed to cleanse their palates with water between each sample, and an extended rest period (3-5 minutes) was taken after every five samples to reduce sensory fatigue.

For each question, the average frequency of each response (e.g. "like extremely", "dislike "moderately", etc. for Question 1, and "entirely agree", "disagree slightly", etc. for Question 2) was calculated across all 46 panelists for each syrup sample. Paired Student's *t*-tests were used to determine if significant statistical differences existed in the frequency of individual responses for High-Brix and Control samples.

	No. of Panelists	Age		
		Mean	Min.	Max.
Female	14	53	39	70
Male	32	50	21	80
Overall	46	51	21	80

Table 1. Age and gender distributions of sensory experiment panelists.

Results and Discussion

The High-Brix syrup samples evaluated ranged in light transmittance from 51.4-83.3% (Figure 2). Four samples were Golden Delicate grade, and five were Amber Rich; six were produced in certified organic operations, and three in conventional operations. The color,

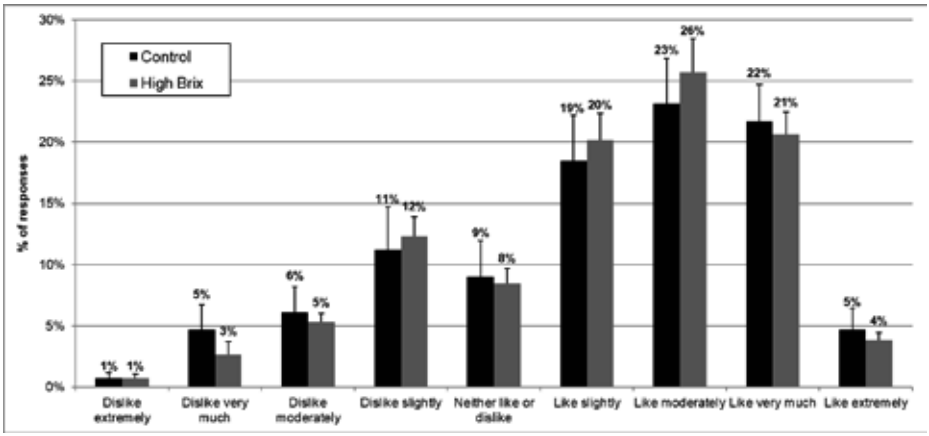

Figure 3. Average frequency of responses of 46 panelists for High-Brix (n=9) and Control (n=6) syrup samples for each category on a 9-point verbally-anchored hedonic scale to the question, "How much do you like or dislike the overall flavor of this syrup?" Error bars represent the standard error of the mean.

grade, and processing type of Control samples were similarly distributed (Figure 2).

The average frequencies of panelists' responses to each sensory question for High-Brix and Control samples are presented in Figures 3 and 4. Panelists' responses to the question "How much do you like or dislike the overall flavor of this syrup" were very similar for High-Brix and Control samples (Figure 3). Overall, 70% of the average responses for High-Brix syrup and 68% of those for Control syrup were "liked" to some degree, from "slightly" to "extremely" (Figure 3). Likewise, there was no significant difference ($p < 0.9453$) in the frequency of each response between the

High-Brix: continued on page 12

	Sample ID	Dislike extremely	Dislike very much	Dislike mod.	Dislike slightly	Neither like or dislike	Like slightly	Like mod.	Like very much	Like extremely	Minimum	Maximum
Control	151	0%	2%	2%	2%	4%	11%	35%	35%	9%	Dislike very much	Like extremely
	268	2%	2%	4%	17%	11%	11%	28%	22%	2%	Dislike extremely	Like extremely
	440	0%	2%	4%	7%	4%	28%	28%	22%	4%	Dislike very much	Like extremely
	577	0%	0%	2%	2%	11%	30%	22%	22%	11%	Dislike moderately	Like extremely
	902	0%	9%	15%	22%	2%	20%	13%	17%	2%	Dislike very much	Like extremely
	953	2%	13%	9%	17%	22%	11%	13%	13%	0%	Dislike extremely	Like extremely
High Brix	172	0%	0%	7%	11%	15%	20%	33%	15%	0%	Dislike moderately	Like extremely
	213	2%	0%	4%	13%	9%	22%	17%	30%	2%	Dislike extremely	Like extremely
	227	0%	4%	4%	7%	11%	13%	35%	22%	4%	Dislike very much	Like extremely
	264	0%	0%	2%	15%	2%	24%	28%	24%	4%	Dislike moderately	Like extremely
	267	2%	0%	4%	13%	11%	15%	33%	17%	4%	Dislike extremely	Like extremely
	412	0%	2%	9%	15%	9%	22%	28%	11%	4%	Dislike very much	Like extremely
	550	0%	7%	4%	9%	7%	20%	28%	22%	4%	Dislike very much	Like extremely
	668	0%	2%	5%	7%	7%	34%	18%	23%	5%	Dislike very much	Like extremely
	861	2%	9%	9%	22%	7%	13%	11%	22%	7%	Dislike extremely	Like extremely

Table 2. Frequency, minimum, and maximum responses of 46 panelists for each of nine High-Brix and 6 six Control syrup samples for each category on a 9-point verbally-anchored hedonic scale to the question "How much do you like or dislike the overall flavor of this syrup?"

High-Brix: continued from page 11

two types of syrup – the average percentage of individual responses (e.g. "like extremely", "dislike slightly", etc.) did not differ between High-Brix and Control syrup (Figure 3).

Table 2 presents the frequency of responses for each individual syrup sample, and further illustrates that the acceptance of syrup flavor was very similar between High-Brix and Control syrup. These results indicate that the flavor of High-Brix syrup was generally liked by panelists and was liked similarly to syrup of similar color produced with standard RO systems.

Panelists' responses to the question "Is the flavor of this syrup characteristic of pure maple syrup" were also very similar for High-Brix and Control samples (Figure 4). For High-Brix samples, an average of 72% of responses were some level of agreement with this statement, from "slightly" to "entirely," and 73% for Control samples (Figure 4). Likewise, there was no significant difference ($p < 0.9375$) in the frequency of individual responses between the two types of syrup – the frequency of responses "agree entirely," "disagree slightly," etc. did not differ between High-Brix and Control syrup samples (Figure 4). These results indicate that panelists generally agreed that High-Brix syrup had flavor that was characteristic of pure maple syrup.

Together, these results indicate that syrup produced with High-Brix systems has flavor that is generally appealing and liked, and is characteristic of pure maple syrup. While these results do not provide an indication of whether the use of High-Brix systems results in *any* impacts on flavor, they do suggest that the production of syrup with High-Brix systems doesn't generally result in significant or adverse impacts on syrup flavor. As with all processing equipment, proper use of High-Brix systems according to the manufacturer's instructions is essential to ensuring

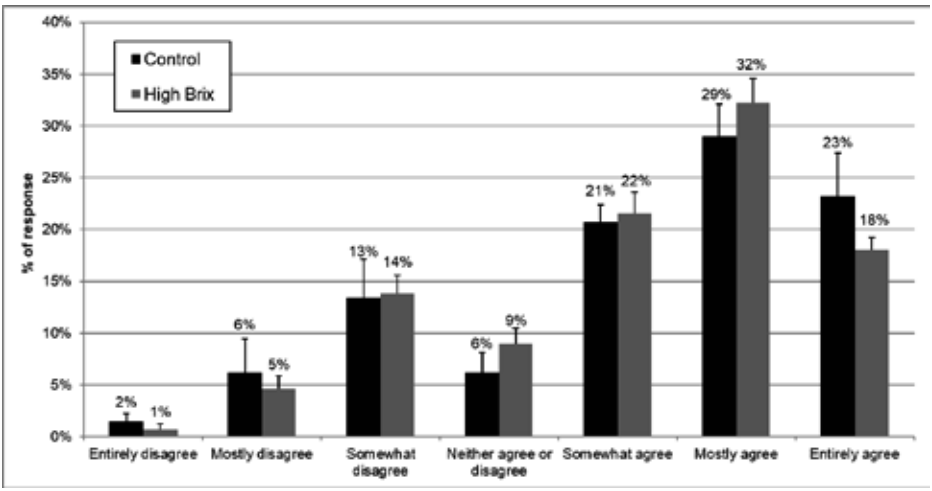

Figure 4. Average frequency of responses of 46 panelists for High-Brix (*n=9*) and Control (*n=6*) syrup samples for each category on a 7-point verbally-anchored Likert agreement scale to the question, "Is the flavor of this syrup characteristic of pure maple syrup?" Error bars represent the standard error of the mean.

optimal quality and flavor.

The range in responses for each sample to the question "How much do you like or dislike the overall flavor of this syrup" is important to note (Table 2). Each sample had at least one panelist indicate the highest or second-highest level of dislike, as well as the highest level of liking. This highlights the fact that the perception and appeal of syrup flavor is highly subjective, and varies considerably between individuals. The definition of "good syrup flavor" is unique to each person, and this is an important factor to consider when discussing and evaluating syrup flavor or the potential impacts of processing technologies on syrup flavor.

Acknowledgements

This research was funded by a grant from the North American Maple Syrup Council Research Fund. We thank Butternut Mountain Farm, Lapierre Equipment, H2O Innovation, Rock Gaulin, Jean-François Goulet, Jean Jones, Carl Lapierre, and the individual participating producers for their assistance in completing this study and generous donations of syrup used in the research.

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Ask Proctor

Timothy Perkins, Ph.D., Director
University of Vermont Proctor Maple Research Center

Why are my tapholes leaking, and what can I do about it?

As tapping time approaches each year, there is sometimes a mad rush to get ready and get out in the woods and make some holes in trees. Unfortunately, haste in tapping can sometimes lead to some real problems that can affect your production negatively throughout the entire season. A common question we hear each year around tapping time is about "leaking" tapholes and how to "fix" them. There are often several issues involved in this, and sometimes the applied remedy itself turns out to be the actual problem.

When tapping a tree, producers are creating a wound. During subsequent thaws, the natural process of sap exudation results in pressure building up in the wood tissue around the wound, and sap flows out. Typically, such flow will occur through a spout that has been inserted in the taphole because it is the path of least resistance. However, for a brief period of time after tapping producers may notice a disconcerting wetness on the bark around the wound and sap running down the stem of trees from the area around the outside of the taphole. While producers may feel the desire to take immediate corrective action, it is actually a very normal wound response. The injured area of wood on the outside of the spout barrel will naturally weep sap. Since this sap cannot move into the taphole due to the blockage of the spout body, it migrates to the wounded surface of the taphole along the wound edge and comes out. If the temperature is cold or windy, the wetness might dry out quickly and go unnoticed. If the sap is running well during or soon after tapping, this wetness will be more prominent. Often if let alone, within a few days the wood tissue in this area along the outer edge of the spout/taphole interface will dry out and the seepage will cease.

All too frequently though, maple producers will interpret this phenomenon as a leak and attempt to "fix" the problem by seating the spout more firmly. This practice, when applied too aggressively, can actually create tiny splits in the wood at the taphole (especially with metal or strongly-tapered spiles) which create or worsen leaks, leading to more corrective attempts. This leads to the improper remedy of "pounding" the spouts in harder, which creates more leakage that will not naturally dry out and seal. It is important to remember that spouts are not nails – they are meant to be "tapped" in, not "pounded" in. It takes some experience to recognize when a spout is seated properly. Often this is best accomplished by sound. Initially spouts will have a higher pitched ping-like sound when first tapped, which changes to a dull "thud" when they are seated. STOP hitting them when you hear that change, or just lightly tap again to confirm.

If you're having trouble with weep-

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Ask: continued from page 15

ing tapholes or vacuum leaks long after spouts were tapped in, or if seepage and leaks are noticed after a hard freeze, then reseating spouts might be worth a try. A moderately-light tap with the hammer should suffice. Modern plastic spouts (especially polycarbonate spouts) with a very gradual taper are considerably less susceptible to spout heaving than previous generations of spouts.

Leaking spouts throughout the season arise from some common problems: 1) oblong tapholes – caused by poor drill control or dull bits, 2) poor or incorrect matching of drill bit and spout – select the proper bit recommended by the spout manufacturer, and 3) split wood around tapholes – caused by over-pounding of spouts or use of a too heavy hammer. A good bit of attention before and during tapping will help to prevent such problems, and result in less leakage and higher sap yields.

Figure 1. Freshly drilled taphole with sap seepage shown by wet stain around and below taphole (*photo T. Perkins*).

Industry: People

Vermont Extension Specialist George Cook Retires

Mark Isselhardt, Maple Specialist, University of Vermont Extension

George Cook began his career in maple 39 years ago as the Lamoille County Extension Agent. Though Vermont no longer has 'county agents,' and some of his specific tasks have changed over the years, George's approachable manner and commitment to service has not. His professional life has been devoted to tireless education and extension efforts aimed at improving the success of maple producers. George's contribution to the maple industry has resulted in better-informed producers and higher quality product in the marketplace.

George has been a regular contributor to the educational programs at Vermont sugarmaker meetings for many years, beginning with county meetings and continuing with the Vermont Maple Conferences. George's UVM retirement commendation serves as an illustration of his service to the industry:

"[George] taught sugar makers in the United States and Canada about grading changes and advances in technology. In 2006 [George] authored a chapter of the North American Maple Syrup Producers Manual titled "Safety in the Sugaring Operation"; for the same manual you co-authored chapters on maple syrup production and maple sugarbush lease agreements. Vermont Maple and Farm Bureau acknowledged

[George's] lifetime of service. Having [his] own small sugarbush has kept [George] grounded. [George] taped over fifty "Across the Fence" shows, appeared on television and radio, wrote dozens of articles, and created training videos and DVD's."

George has helped judge maple contests throughout his long career, always looking for the chance to help producers understand when flaws are identified and how to correct them in the future. George also has a keen eye with a camera. His ability to capture both nature and the process of making syrup has helped entertain and educate.

George's maple operation may be modest in size (fewer than 200 taps) but its proximity to schools and major roads in the county afford it an outsized educational value. Thousands of school children have learned about the production of maple in his sugarhouse. A regular and convenient stop during Vermont Maple Open House Weekend, George's sugarhouse is well positioned to introduce people to the art and science of sugar making, as well as provide a familiar place for producers (or would be producers) to learn about new methods.

Perhaps George's greatest contribution, something you realize the very first time you meet him, has been his own unique blend of passion for all things maple and his friendly and approachable attitude towards sharing information and knowledge with others. The maple industry in Vermont and beyond have been well served over his 39 years.

Summaries of Research Presentations from 2017 NAMSC Annual Meeting

Healthy Sugarbushes : A Prerequisite to Sustained Yield

Rock Ouimet, Ministère des Forêts, de la Faune et des Parcs, Québec

Climatic events, acid rain, management operations, and other factors have affected sugarbushes in the last 30 years, particularly in regards to the growth of other species in these forests. As a result, some problems have begun to occur, such as sugar maple decline and dieback, American beech intrusion, and fern colonization of the understory. To overcome these problems, attention must be paid to improving sugarbush health. The speaker shared his 29 years of experience in scientific research on this topic for maple sugar producers.

Analysis of the Impacts of Climate Change on the Production of Maple Syrup

Daniel Houle, Ouranos and Ministère de la Forêt, de la Faune et des Parcs, Québec

Since the beginning of the 20th century, the northern hemisphere has undergone an increase in temperature of almost 1 degree Celsius. This increase represents the start of a long trend towards higher and higher average temperatures. For a long time we've understood that maple production is deeply affected by climatic conditions. What will be the magnitude of this climatic change? How much sooner will the sap start flowing as our spring seasons become warmer? What will be the effect on yields at the tap? How will Quebec and U.S. producers view these changes? This session addressed these questions using recent research results on production as well as through a survey carried out among producers on both sides of the border. These results help to better evaluate the issues facing the maple sector and, as needed, identify measures that the sector's main actors may be required to adopt in response.

Effect of Chemical Descaling of Evaporator Back Pans During the Season on the Properties of Maple Syrup

Fadi Ali, Centre ACER

Scaling of back pans on an open evaporator occurs during the production of maple syrup affects the performance of the evaporator and the quality of the final syrup. The removal of in-season deposits is a challenge, especially for organic maple syrup producers. It is a difficult and time-consuming operation. Many types of methods and chemical agents are used to clean pans, but these methods cannot be used by organic maple syrup producers. For this reason, an organic cleaning agent has been tested to remove deposits from back pans during the season. The cleaning method was studied on two types of evaporators: a traditional one and one equipped with an automatic pan cleaner. The objective of this project is to evaluate the effects of selected chemical agents and cleaning methods on the characteristics and quality of the syrup produced. The main purpose is to measure the residual concentration of the chemicals tested in the syrup produced after cleaning. The primary findings of this study were presented,

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Research: continued from page 21

and will be published in an upcoming issue of the *Maple Syrup Digest*.

Exotic, Invasive Earthworms: A Clear and Present Danger to Regeneration in Our Northeastern Sugarbushes

Jessica Ann Rubin, Entomology Research Laboratory, University of Vermont, USA

Most people think earthworms are native organisms with a positive effect on the sugarbush ecosystem. In fact, most earthworms in Northern North America are exotic species. In recent years, East Asian species (e.g., genus Amynthas, commonly called snake worms) have become established in some regions, and have been shown to be extremely invasive. Invasive worms are a serious threat to the health of sugarbushes and other Northern hardwood forests. They feed in the upper layers of the soil and consume the organic horizons, altering the soil chemistry and moisture balance. This sets in motion a cascade of events beginning with fundamental changes in soil fertility, biodiversity and soil structure. This in turn results in a reduction in plant understory biodiversity and sugar maple regeneration. In forests where these worms were present, exotic invasive plant species, such as buckthorn (Rhamnus cathartica), garlic mustard (Alliaria petiolata), and opportunist species, like hay-scented fern (Dennstaedtia punctilobula), were often found.

For the past three years, researchers from the University of Vermont have been sampling for invasive earthworms in sugar maple forests in New York, New Hampshire, Massachusetts, Connecticut and Vermont, covering plant cold hardiness zones 4-6. In addition to determining worm abundance and species diversity, the impact of these worms on sugar maple regeneration and the forest understory was assessed. Variations in the presence and abundance of worms were observed relative to cold hardiness zone and sample year. Correlations between worm abundance and understory vegetation were also detected. The impact of worms on the health of sugarbushes was discussed, and suggestions were given for actions sugarmakers can take to address the negative effects of exotic, invasive worms.

An Update of Research at UVM Proctor Maple Research Center

Timothy Perkins, Proctor Maple Research Center, University of Vermont, USA

This presentation provided an update on a variety of research topics ongoing at the UVM Proctor Center, including activities on tapping guidelines and sustainability, improvement of sap yields, and the relationships among climate and sap production. It was noted that additional research needs to be considered for why production degrades more quickly in 3/16" tubing systems than in 5/16". The Center's study of long term impact of tapping on tree growth and health has discovered no significant difference in growth in the first four years of the project.

Study of the Buddy Taste in Maple Syrup

Nathalie Martin, Centre ACER

Quebec producers have reported buddy-tasting syrup mid-season, well before buds began to break. This prompted a study of what molecules cause the buddy taste, and how such flavors can be predicted and avoided. Research has focused on the presence of Sulphur molecules and amino acids, and the transformation they undergo during boiling.

Maple Sap Composition Variation from a Yeast Perspective: An Integrative Biology Approach

Marie Filteau, Département des Sciences des Aliments, Université Laval, Québec

The quality of maple syrup is largely dictated by sap composition. Maple sap chemical composition varies from place to place and from period to period, as it is influenced by both the maple tree physiology and microbial contamination of the harvesting system, which are themselves influenced by environmental conditions. To better characterize this variation, we used yeast as a biological reporter to monitor the evolution of nutrient availability during the season. The approach consists of observing the growth in maple sap of over 4,500 yeasts whose metabolism has been genetically modified. The difference of growth in sap compared to a control medium reveals the metabolic pathways involved in sap use. First, this approach revealed the presence of allantoate in maple sap.

Allantoate is the main molecule used by maple for nitrogen storage and it is released in the sap over the spring season. This result is important for our understanding of microbial growth in maple sap, but also for the transformation process. Indeed, allantoate can serve as a substrate for the Maillard reaction, which occurs during transformation in the presence of reducing sugars. Second, the approach revealed the appearance of an organic sulfur source at a precise point in the dormancy release process of the tree, which translates in the appearance of flavor defects. Ultimately, understanding the variation of sap composition will help to understand the causes of various flavor defects and to develop monitoring tools to ensure maple syrup quality.

From 8 to 35 °Brix – Research on Reverse Osmosis and Syrup Flavor and Quality

Abby van den Berg, Proctor Maple Research Center, University of Vermont

Concentrating sap with reverse osmosis (RO) significantly increases the efficiency and profitability of processing sap into syrup by reducing the amount of both fuel and time required to concentrate the material to syrup density in the evaporator. However, because this also reduces the amount of time sap is processed in the evaporator, and since most of the reactions from which the flavor and color properties of maple syrup are ultimately derived occur as sap is processed with heat in the evaporator, it has been questioned whether this could result in impacts on the finished syrup. To address these questions, a series of controlled experiments were conducted using commercial maple equipment to investigate the potential effects of the use of RO on the composition, properties, and flavor of the maple syrup produced. A summary and synthesis of the results of these experiments was presented. See the article in this issue of the *Maple Syrup Digest* for details.

Make the Jump to Organic, an Option Accessible to Everyone

Étienne Nadeau, Ecocert Canada

An increase in overall demand for organic products is the result of a new and different kind of consumption ethic, one of the defining characteristics of Generation Y. Choosing to produce organic maple syrup remains a business decision. This session aimed to demystify organic production.

Materials from these presentations are available at http://www.centreacer.qc.ca/transfert/presentations

Research: Specialists

NAMSC Annual Meeting 2017: Maple Specialists Report

Luc Lagacé, Centre ACER

The NAMSC Specialists Meeting held on Sunday, October 22nd in Lévis, Québec, was a rewarding and successful experience. There was a good participation from the 14 extension and research specialists coming from Québec, Ontario, Vermont, and Maine.

Each participant gave an informative summary of activities organized during the last year. Once again, many maple producers were reached through extension and training activities organized in the many maple regions. Besides extension and training, participants were particularly concerned about topics such as acidic soils and the need for liming, the forest tent caterpillar infestation, the advent of new maple equipment, and the increase in new producers. As such, extension and training needs are increasing, though the number of personnel to meet the demand is not, especially in regions like Vermont and Maine where recent retirements of key personnel is an issue. Therefore, extension and training specialists agreed on four common points to address to the NAMSC as priorities:

1. The demand for extension is increasing with less people to do it. Videos and blogs are part of the answer to this problem but this is not enough. There is a need to hire new people to talk to producers and for a strategy from the industry to address this situation.
2. As maple production is increasing with new producers getting into the business, the availability of workers in the sugarbush is falling short. There is a need for a strategy from the industry to facilitate the hiring of new workers and for proper training and education.
3. Waste disposal in the sugarbush where large amounts of water and cleaning solution have to be eliminated is a subject of concern. Regulation of these issues for maple producers is inconsistent through maple regions. There is a need to clarify this situation and to come up with a common message to answer this question.
4. Participants agreed that this annual meeting should be scheduled closer to the technical sessions to accommodate more people, especially those not attending the whole meeting. Not necessarily on the same day of the technical sessions but maybe the day before and at a reasonable time, if possible.

2017 NAMSC Maple & Photo Contest Winners

Maple Products

Maple Cream

1st - Riordon Maple Delight (Riordon George) NB, CAN

2nd - Hubbert's Maple Products (Williams Francis Hubbert) Ontario, CAN

3rd - Couture Maple Shop (Jacques Couture) Vermont, USA

Maple Candy

1st - Green's Sugar House (Pamela Green) Vermont, USA

2nd - Paul's Sugarhouse (Paul Zononi) Massachusetts, USA

Stirred Maple Sugar

1st - Hubbert's Maple Products (Williams Francis Hubbert) Ontario, CAN

2nd - Riordon Maple Delight (Riordon George) NB, CAN

3rd - Paul's Sugarhouse (Paul Zononi) Massachusetts, USA

Maple Syrup Golden

1st - Hubbert's Maple Products (Williams Francis Hubbert) Ontario, CAN

2nd - Girard's Sugarhouse (Michael Girard) Connecticut, USA

3rd - Green's Sugar House (Pamela Green) Vermont, USA

Maple Syrup Amber

1st - Couture Maple Shop (Jacques Couture) Vermont, USA

2nd - Hedmark's Maple Ridge (Fred Hedmark) Wisconsin, USA

3rd - Wood's Maple Orchard (Steven Wood) Wisconsin, USA

Maple Syrup Dark

1st - Klebenow's Sugarbush (Brian Klebenow) Wisconsin, USA

2nd - Riordon Maple Delight (Riordon George) NB, CAN

3rd - Wood's Maple Orchard (Steven Wood) Wisconsin, USA

Maple Syrup Very Dark

1st - Wood's Maple Orchard (Steven Wood) Wisconsin, USA

Golden Maple Syrup award winners, Pamela Green, Michael Girard, and Williams Francis Hubbert (l to r). (*Credit: Jean-Guy Labbé*)

Photographs

Sugar Bush Scene

Gingerich Brothers & Sperry LLC (Frank Merriman) USA, Ohio

In Action

Gingerich Brothers & Sperry LLC (Frank Merriman) USA, Ohio

The Next Generation

Gingerich Brothers & Sperry LLC (Frank Merriman) USA, Ohio

Creative

Boyden Bros. Maple (Howard Boyden) USA, Massachusetts

Minutes of the 2017 NAMSC Annual Meeting

October 22-25, 2017, Lévis, Quebec

The 58th annual meeting of the North American Maple Syrup Council (NAMSC) was hosted by Citadelle Maple Syrup Producers Co-operative.

The conference was held in conjunction with the 43rd annual meeting of the International Maple Syrup Institute (IMSI). Meetings began on Saturday October 28th with the NAMSC and IMSI Executive Committees discussing issues facing their respective organizations. An informal Board meeting which included the officers, delegates, alternate delegates and committee members of NAMSC met the following day. The IMSI Board of Directors meeting and maple research extension meetings were also held on Sunday.

There was a large equipment trade show and Nine (9) Technical Sessions including: Healthy Sugarbushes; A Prerequisite to Sustained Yield, Analysis of the Impacts of Climate Change on the Production of Maple Syrup, Effects of Chemical Descaling of Evaporator Back Pans During the Season on the Properties of Maple Syrup, Exotic, Invasive Earthworms: A Clear and Present Danger to Regeneration in Our a Northeastern Sugarbushes, An Update of Research at UVM Proctor Maple Research Center, Study of the Buddy Taste in Maple Syrup, Maple Sap Composition Variation from Yeast Perspective: An

Integrative Biology Approach, From 8′ to 35′ Brix – Research on Reverse Osmosis and Syrup flavor and Quality and Make the Jump to Organic, An Option Accessible to Everyone.

Dr. Eric Randall, president of NAMSC opened the 2017 Annual Meeting. Ray Bonenberg, president IMSI and Cecile Brassard Pichette, chairman 2017 Convention committee welcomed everyone to Quebec.

Secretary's Report: Joe Polak, secretary, read the roll call of states and provinces. The delegates introduced their respective alternates.

Delegates (D) and Alternates (A) included:

- Maple Syrup Producers Association of Connecticut; Ron Wenzel, proxy, J Mark Harran (D), Art Roy (A)
- Indiana Maple Syrup Association; David Hamilton (D), Melvin Hawks (A)
- Maine Maple Producers Association; Lyle Merrifield (D), Kevin Brann (A)
- Massachusetts Maple Producers Association, Inc.; Winton Pitcoff (D), Melissa Leab (A)
- Michigan Maple Syrup Association; Debbi Thomas (D), Larry Haigh (A)
- Minnesota Maple Producers Association, Inc.; Ralph Fideldy (D), Stu Peterson (A)
- New Brunswick Maple Syrup Association, Inc.; David Briggs (D), George Roirdon (A)
- New Hampshire Maple Producers Association; David Kemp (D), Susan Folsom (A)

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- New York State Maple Producers Association; Dr. Eric Randall (D), Lyle Merle (A)
- Maple Producers Association of Nova Scotia; Avard Bentley (D), Kevin McCormick (A)
- Ohio Maple Producers Association; absent
- Ontario Maple Syrup Association; Brian Bainborough (D), Bob Grey (A)
- Pennsylvania Maple Syrup producers Council; Eric Randall, proxy, Larry Hamilton (D), Matt Emerick (A)
- Maple Syrup Producers Cooperative of Quebec; (Cooperative de Producteurs de Sirop D'erable du Quebec) Cecile Brassard Pichette (D), Michel Labbé (A)
- Rhode Island Maple Syrup Producers Association; Richard Norman, proxy, Thomas Buck (D), Robert Burdick (A)
- West Virginia Maple Syrup Producers Association; absent
- Wisconsin Maple Syrup Producers Association, Inc.; James Adamski (D), Joe Polak (A)

Secretary Polak reported 15 member states and provinces were present and two absent.

The minutes of the 57th Annual Meeting held at Hilton Hotel and Resort, Burlington VT were presented as written by J. Polak. M/S R. Wenzel/ D. Hamilton. Passed.

Financial Report: The report of the NAMSC General Fund FYE August 31, 2017 was present by J. Polak, treasurer as follows

- Funds in checking account $27,151.49
- Cash receipts of $64,590.88 and disbursements of $69,357.81, leaving a net loss $4,766.93.
- Income is based solely on dues from member states and provinces.
- *Maple Syrup Digest* receipts $38,095.81 and disbursements of $24,827.02, with a net gain of $13,269.79.
- Balance of investment accounts (dedicated for special projects) $89,281.36.
- NAMSC Research Fund balance in savings account: $79,256.52. Receipts $49,920.05 and disbursements were $34,573.92.

M/S to accepted treasurer's report pending review of Audit Committee. R. Wenzel/A. Bentley. Passed.

Research Committee Report: W. Pitcoff reported the money to fund research projects comes from voluntary contributions from individuals and businesses and the majority of the funding is received through the NAMSC Research Alliance Partner Program and the penny per container program.

W. Pitcoff referenced a letter received and printed in 2017 NAMSC book from Dr. Perkins. Maple production has increased ten-fold since 2005 but the penny per container has not doubled in the same time frame. Research dollars at the institutions doing maple research is going away. It is time for industry to seriously consider future sources of research funding. If contributions had kept pace with production we would be receiving $150,000.00 per year to fund maple research.

The NAMSC Research Fund committee received four (4) proposals. Two (2) Proposals were chosen for funding totaling $48,120.00.

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- Disastrous Seasons: An Exploration of Preventative Strategies, Dr. Abby van den Berg and Dr. Timothy Perkins, University of Vermont. One year funding $35,000.00.
- Microbial Safety of Maple sap and syrup; Survival of Fungal Spores and Bacterial Pathogens during Processing, Packaging and Storage, Jennifer Perry, Beth Calder, Kathy Hopkins, University of Maine. Funding approved year one $13,120.00 and year two $19,800.00.

Research funding is made possible through voluntary contributions made to the penny per container program or flat fee. Contributions are made by individual producers, businesses, associations and Alliance Partners. Currently we have 15 Alliance Partners: three container manufacturers - (Sugarhill (MA), D&G USA (VT), Inovaweld (QC), six dealers - (Maple Hollow (WI), Haigh's (MI), Sugarbush Supplies (MI), CDL (QC), and Sunrise Metals (IN), six associations – Vermont Maple Sugar Makers Assoc., Massachusetts Maple Producers Assoc., New Hampshire Maple Producers Assoc., Indiana Maple Syrup Assoc., Wisconsin Maple Syrup Producers Assoc., and Maple Syrup Producers Assoc. of Connecticut.

W. Pitcoff reported the ***Maple Syrup Digest*** is maintaining quality and circulation with a growing list of advertisers. Editor is looking for photos, articles, advertising, classifieds and other printable information.

Strategic Plan: M. Girard reported the Strategic Planning initiative began at the year 2000 Annual business meeting in VT with Luc Lussier chairing the first planning committee. There has been a series of updates to the plan over the past 17 years.

The Delegates began discussion regarding the next five years of the Council. The Council will need to grow to meet the needs of our membership. The industry is experiencing significant growth in the US and Canada. We need to work together to market maple nationally, internationally and develop more value added products. Our volunteer maple organizations (US and Canada) must adapt to the growth and needs of their membership and the membership must provide support needed by our associations to accomplish their goals. M/S R. Wenzel/D. Thomas to approve updated Strategic Plan. Passed.

American Maple Museum: A name change to from the American

2017 NAMSC delegates. (*Credit: Jean-Guy Labbé*)

Maple Museum to the International Maple Museum Centre is in progress. One of the large rooms on the second floor has been renovated with help of a $10,000.00 donation from NAMSC in 2017. The new "North American Maple Syrup Council Room" will house plaques, photos and memorabilia from the present and future inductees to the Maple Hall of Fame. The initial funds were provided equally from the Richard G Haas Memorial Fund and the Elmer and Mary Kress Fund. The delegates voted to contribute an additional $10,000.00 from the Special Funds account for necessary audio visual equipment or other improvements needed to complete the room. Any funds provided the Museum will be upon review and approval of the NAMSC Executive Committee.

Education Committee: E. Randall reported:

- Four hundred (400) off flavor syrup kits were produced by University of Vermont and Butternut Mountain Farms. They were distributed by NAMSC to member States and Provinces. These kits are examples on natural off-flavors including metabolism, sour sap and buddy syrup.
- There is discussion on developing additional off-flavor kits of flavors such as chemical off-flavors, etc.
- Two supplements to the *Maple Syrup Digest* were completed and distributed through the Digest. The June Topic was on "Proper Density Measuring" and October issue was on "Gravity Filtering"
- In cooperation with Mark Isselhardt,

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UVM Extension, the NAMSC sponsored two instructional videos. One video was on syrup clarity and another on syrup density. Both videos can be viewed on YouTube.

- Information transfer is a priority to our mission

USDA requested proposals for projects late summer for funding with ACER Grant. Prospective awardees had 28 days to respond. 29 days later 3 proposals were granted funds. Recipients were: Iowa State University, University of Vermont and West Virginia Department of Agriculture. The NAMSC is working with Proctor Maple Research Center, UVM in developing a curated portal of resources for the maple industry, collecting technical, practical and research resources. Also Iowa State University Extension and developing further practical skill guides to be published and distributed in the Maple Digest.

Communications Committee: D. Briggs reported the *Maple Syrup Digest* has substantially more content and will soon be raising the individual subscription rate (only) to cover costs. The translation of the *Digest* continues

to be a topic discussed but no resolution. Communication will be improved among the Council Delegates with scheduled conference calls.

Website: K. Zander will update the NAMSC website. The goal is to drive inquires to local member association sites.

March is Maple Month program will continue promotion through links to member association sites. This is a joint effort of the NAMSC and IMSI which will continue through a NAMSC website www.maplemonth.org

Convention Planning Committee: J. Polak said he has a wealth of information for future host committees to access. M. Girard has the specifics for the room requirements from previous years.

The *North American Maple Syrup Producers Manual*: Dr. Tim Perkins, UVM reported that the updates to the present 2006 version of the *North American Maple Producers Manual* has been in the planning process for a while and there is a substantial amount of work remaining.

With UVM's reductions in staffing and funding, the sections that need updating in the present manual will need to be continued through the NAMSC. The Council will be reviewing the options on ways to get the necessary sections of the Manual updated and the information out to the producers.

Hall of Fame: Richard Norman reported next years' inductees will be Dr. Eric Randall (NY) and Bruce Gillilan (VT).

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National Agricultural Statistics Service: G. Keogh reported 2017 statistics. 1.5% increase in US production and 6% increase in number of taps. Average production was .32 gallons per tap. 13.4 million taps in US.

200 million pounds syrup is world production. 1.2 billion dollars of value and with value added we have 2-3 billion impact.

38% of taps in US are organic, almost 50% of crop. Encourage more producers to respond. For more information go to: www.nass.usda.gov

Maple Specialists Report: L. Lagace, Center Acer reported George Cook and Henry Marckres of Vermont retired. T. Perkins, University of Vermont, has convinced Lapierre Equipment to collaborate on project. Other studies include sap yield and 3/16" tubing. Dr. Abby van den Berg is working on study looking at long term impact of tapping and birch syrup. Centre Acer reported number of bushes in Quebec has increased and the size of bushes are increasing. New equipment on the market is often not tested. University of Maine Extension, K. Hopkins, discussed maple marketing, FSMA and pending retirements. T. Luety, ON, discussed: acid soils and liming of Sugarbushes, First Nations and maple, maple blogs and dealing with defoliation and tent caterpillars with drones.

M. Isselhardt, VT, talked about Forest Tent Caterpillars. The summary of discussion is that the demand for extension work is increasing, Staffing at Sugarbushes is a growing concern and waste disposal is becoming a problem.

Social Media: NAMSC supports the

work of IMSI Social Media Marketing Campaign as presented by Brad Gillilan (VT). The French and English messaging is starting with Facebook which will have a year-round focus on the seasons, promoting the value and uses of pure maple products. M/S W. Pitcoff/L. Merrifield.

Codex: NAMSC provided a letter of support to IMSI who is collaborating with the Quebec Federation for an International Codex certification. This certification will take a few years but it is a very important step when introducing maple to the non-maple world. Codex Alimentarius is a collection of internationally recognized standards, codes of practice, guidelines and other recommendations relating to foods, food production and food safety.

Audit Committee: Statement signed by committee: D., Briggs, D. Thomas, C. Pichette and J. Adamski. All accounts are in order. M/S D. Briggs/ R. Wenzel. Passed.

Budget: After much discussion budget was approved with changes. M/S E. Randall/J. Adamski.

It was approved at previous meeting to reimburse researchers when reporting conclusion of funded studies up to $1,000.00. Motion to reimburse general fund from Research account. M/S R. Wenzel. W. Pitcoff. Passed.

Motion made to return $5,000.00 budgeted in 2017 for the American Maple Museum. M/S R. Norman/ L. Merrifield. Passed.

Motion was made to donate up to $10,000.00 from the Special Funds account to the American Maple Museum. M/S D. Briggs/R. Wenzel. Passed.

Nominating Committee: Chairman D. Hamilton nominated David Briggs (NB) for president, Debbi Thomas (MI) vice president and Joe Polak (WI) secretary/treasurer. There were no nominations from floor. R. Wenzel/C. Pichette. Passed. (One abstention)

Associate members nominated for three year term expiring 2020: Karl Zander, webmaster, WI; Gary Keogh, USDA/NASS, NH; Dr. Nathalie Martin, Chemist, Centre Acer, QC; Dr. Abby van den Berg. Research Technician, Procter Center, VT; Tim Wilmot, D&G. VT; Benoit Pepin, VT; Ron Wenzel, producer, CT; Henry Marckres, VT; Martin Plante, Citadelle, QC; Dr. Jesse Randall. Research Prof, Iowa State, IA; Geoff Picard, CT; Steve Broderick, CT; Dr. Joe Orafice, Uihlein Director, Cornell, NY; Michel Labbe, President Citadelle, QC.

Names removed: Yvon Poitras, Luc Lussier, Tom McCrumm, Rick Marsh, Gary Gaudette, Roy Hutchinson, Richard Norman and Paul Palmer. M/S D. Hamilton/ R. Wenzel. Passed

Life members nominated: Bruce Bascom, Equip dealer, Maple Expert, NH; Gary Gaudette, Retired Equip Manufacturer, Maple Expert, VT; Dr. Gary Graham, Maple Specialist, OH; Cecile Brassard Pichette and Citadelle, QC. M/S D. Hamilton/ R. Fideldy. Passed

Committees appointed by President D. Briggs:

Audit Committee: Debbi Thomas, chairman, Jim Adamski, Cecile Pichette, and Larry Hamilton.

Communications Committee: Debbi Thomas, chairman, Winton Pitcoff, Karl Zander, Debbi Thomas, Dave Hamilton, Eric Randall, and Brian Bainborough.

Convention Planning Committee: Joe Polak, chairman, Michael Girard,

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Ralph Fideldy and Michel Labbé

Education Committee: Missy Leab, Chairman, Brian Bainborough, Winton Pitcoff, Steve Childs, and Jesse Randall.

Finance Committee: Jim Adamski, chairman, Eric Randall, Lyle Merrifield, Mike Girard, Avard Bentley, and Joe Polak.

Maple Hall of Fame Committee: Richard Norman, chairman, Gary Gaudette, Avard Bentley, Roy Hutchison, Norman Anderson, Steve Selby, and Dave Chapeskie.

Nominating Committee: Eric Randall, chairman, Stu Peterson, David Kemp, and Cecile Pichette.

Research Committee: Winton Pitcoff, chairman, Eric Randall, Jacques Couture, tom McCrumm, Henry Marckres, Joe Polak, Mike Girard, Ron Wenzel, Martin Plante, and Tim Wilmot.

Strategic Planning/Policy Committee: Mike Girard, chairman, Winton Pitcoff, David Briggs, Jim Adamski, Lyle Merrifield, and Joe Polak.

Executive Director: Mike Girard.

Maple Digest Editor: Winton Pitcoff.

Future Host States and Provinces: 2019 Minnesota, 2020 Wisconsin, 2021 New York, 2022 Massachusetts, 2023 Maine.

2018 New Hampshire: Dave Kemp announced that the 2018 Conference will be hosted by the New Hampshire Maple Producers Association and held Oct. 26th-29th, at Marriott Hotel & Conference Center, Concord, N. H.

David Briggs thanked NAMSC for putting trust in him to lead the organization. He thanked executive committee and Karl Zander for doing a good job, and feels we need to adapt to challenges facing the industry. Delegates were then requested to meet immediately after closing.

Annual Banquet was held and the NAMSC presented two (2) well deserved awards:

- First was the Richard G. Haas Distinguished Service Award presented to John M. Stockie, Ph.D. Simon Fraser University, Burnaby, British Columbia, in recognition of his ongoing support in the advancement of the maple syrup industry through Research and involvement with the NAMSC Research Fund as a Research Professional.

- Second was the NAMSC Special Recognition Award, presented to Cecile Brassard Pichette, Citadelle Maple Producers Cooperative, Plessisville, Quebec, in appreciation of her years of service and dedication to the maple industry, and with sincere gratitude for her participation and support of The NAMSC. Mrs. Pichette has been involved in maple since 1980 and starting working for Citadelle in 1990. In 2005 she was named president of the organizing committee for the NAMSC/IMSI convention. She was named Vice President of Citadelle Board of Directors and replaced Luc Lussier as delegate to NAMSC. A few years later she was named Vice President NAMSC, and then President in 2012. She does charitable work around the world and is currently the president of Societe' de Cooperation pour le Development International. Her motto: together we must produce a good product, whether we are in the US or Canada. As delegate and president Cecile has been an outstanding ambassador for the maple industry and NAMSC.

Submitted by,
Joe Polak, Secretary/Treasurer NAMSC

International Maple Syrup Institute News

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

The IMSI held its board of directors meeting and annual meeting on Sunday, October 22 and Monday October 23 respectively at the Four Points Sheraton Hotel in Lévis, QC. The meetings were chaired by IMSI President Ray Bonenberg and were well attended by IMSI Directors and others from many maple producing states and provinces. Some highlights from the meetings in Lévis included achieving consensus on a plan to follow up on developing key messaging themes to accompany the new international maple marketing slogan, a review and follow-up plans for the IMSI's social media campaign, dialogue regarding status and IMSI follow-up regarding product labelling issues in the U.S. and Canada, and re-affirmation of support for the international Codex application.

The IMSI Board of Directors and IMSI Executive Committee were elected for the 2018 calendar year. Volunteer consultants were also confirmed by the board. As in 2017, the IMSI will have 30 Directors in 2018, the maximum permitted under the IMSI constitution. There will be no change in IMSI Executive Committee members in 2017. IMSI Directors represent the main stakeholder groups including state and provincial associations, maple packers/processors, maple equipment vendors, small maple enterprises and maple researchers/extension personnel.

Supply, Demand, and Pricing of Maple Syrup

The Federation of Quebec maple syrup producers currently has over 100 million pounds of syrup in its strategic reserve, which is significantly more than is needed to help safeguard the industry from the effects of a poor crop in 2018, if that were to happen. Some buyers of maple syrup in the U.S. are voluntarily holding significantly more inventory than they require in order to maintain their supplies and help maintain stable prices for bulk syrup. Stable and adequate prices to ensure profitability are critically important to the viability of the maple syrup industry.

Currently, prices for retail maple syrup remain stable but competition is strong, especially among packers/processors. Recent company mergers by Lantic Sugar suggest that there is a move to partially offset tight profit margins with increased economies of scale and enhanced market penetration overseas. This may be a factor in helping the industry cope with excess supply at least in the medium to longer term.

Sales of maple syrup are increasing by about 10% annually, while the sales of processed sugars are declining, according to Nielsen data. Most growth in markets in the U.S. is in the non-maple producing states. It was reported that Canadian sales in the tourism sector remain strong.

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Development of a Codex Application for Maple Syrup

Codex Alimentarius is an international certification program for food products which are sold in markets around the world. It provides a definition for various food products and outlines food quality and safety assurance standards which are the accepted norm for a variety of different food products.

Working under the umbrella of the IMSI, the Federation of Quebec Maple Syrup Producers continues to work on drafts of the Codex application documents and these drafts have been reviewed by federal government agency representatives in the United States and Canada as well as by the IMSI Board of Directors.

A copy of this draft can be obtained from the IMSI Executive Director upon request. A motion of support for the Codex Application subject to further review and amendments was passed at the IMSI Annual meeting in October. A final draft of the Codex application will be presented to the IMSI Board of Directors for consideration at their next Board of Directors meeting in February. In the meantime, ongoing input on the draft application documents is encouraged from IMSI members and NAMSC delegates.

Maple Water Labeling Recommendations and Related Research:

Interest in maple sap and water products continues to be high, with some companies falling out and others emerging as time goes on. This is normal as a new industry opportunity emerges.

In 2015, an IMSI Maple Sap Water Committee, chaired by Lyle Merle, developed labelling recommendations for

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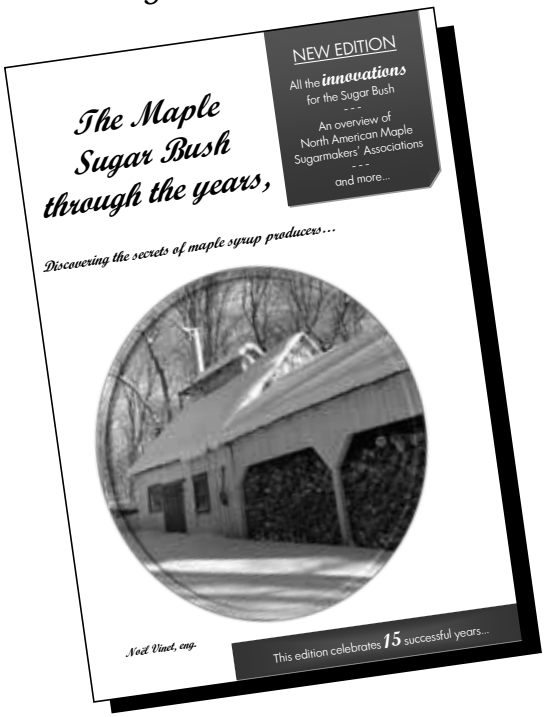
New Year Gift

You want to know more about maple sugar bushes, the discovery of maple syrup by Native Americans and all the secrets of maple syrup producers... this book is for you and will take you back in time.



This book will inform you about:

- The discovery of maple syrup through Native Americans, newcomers and sugar bushes of yesteryear.
- The maple sugar bush and its treasures; the magical maple tree,
- All the secrets of the transformation of maple syrup,
- The first evaporators and the latest hi-tech models,
- Products derived from maple,
- Customs, expressions, myths and legends, and the outstanding contributions of horses in maple syrup production.

A FULL Chapter related to All Maple Sugarmakers' Associations, and also a FULL Chapter on new INNOVATIONS of all sorts.

280 pages, 290 black & white illustrations and some 190 colour photos

Book Price: $59.95 plus $12.50 for shipping and handling web site: www.horsepowerlogging.com

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maple sap water products, in consultation with maple sap water companies. These recommendations were distributed to government regulatory authorities in both Canada and the United States, following their approval by the IMSI Board of Directors. In December 2016, the FDA responded formally to the IMSI's recommendations. FDA interpretations do not align well with the IMSI's recommendations. Consequently, the IMSI will be applying formally to FDA seeking amendments that are in alignment with the IMSI's position. Before a formal application is put forward to FDA, the IMSI will conduct another round of consultations with IMSI members and representatives of the maple sap water industry. This follow-up is planned in the winter of 2018.

The IMSI continues to be active in working to facilitate attempts by maple researchers from Centre Acer and the University of Rhode Island to secure financing for developing a standard of identity for maple sap. Findings from this research would be very helpful in advancing the development and expansion of the maple sap water industry.

IMSI Annual Awards, 2017

IMSI Lynn Reynolds Memorial Leadership Award - Gaston Allard: retired maple researcher from Quebec City for his extensive contributions in maple research and education of benefit to the North American maple syrup community.

IMSI Golden Maple Leaf Award – Citadelle Cooperative: Plessisville, Quebec, for their innovative network of Canadian Delice stores promoting real maple products.

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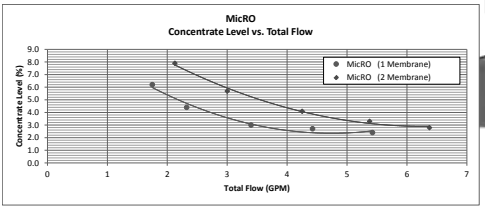

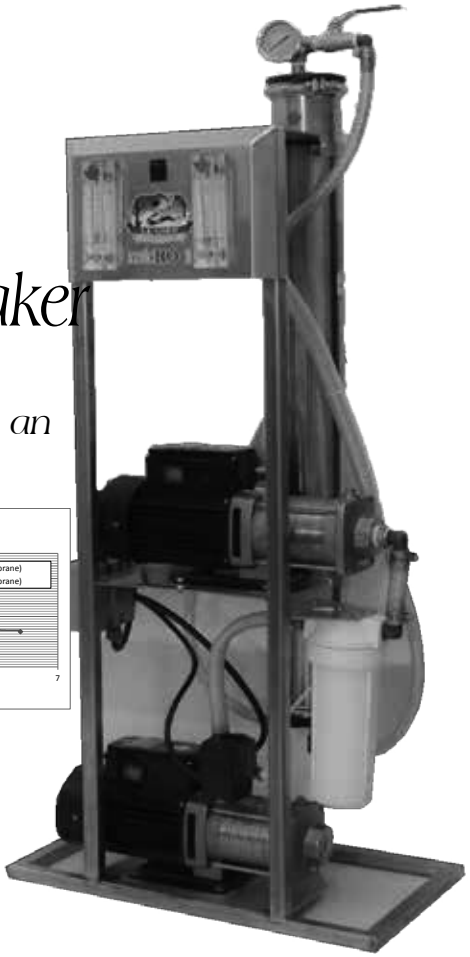

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IMSI President's Award (5 recipients):

Senator Nancy Greene Raine, Sun Peaks, British Columbia, for her assistance and dedication in helping shepherd the IMSI standardized maple grading proposal through the political process at the federal level in Canada.

Eric Prud'Homme, Quebec, for his contributions in supporting the maple syrup industry over many years as CFIA's representative.

Dr. Michael Farrell, New York State, for his support in helping with Consumer Research in support of the IMSI's Maple Promotion and Marketing initiative.

Dr. Navindra Seeram, Rhode Island, for his work in researching the nutritional and potential health benefits of maple syrup and so effectively transferring his findings through various media venues.

Dr. John Garwood, Quebec, for his contribution to consumer research in support of the IMSI's maple grades initiative and ongoing advice and assistance in helping with implementing aspects of the IMSI's marketing plan.

Maple Month 2018

The IMSI will continue to support Maple Month in 2018. In particular, we will be highlighting maple month through our ongoing social media postings in the lead-up and during the month of March 2018.

For further information, please contact the IMSI's Executive Director: agrofor@ripnet.com

NAMSC

2017 NAMSC Research Fund Contributors

Each year NAMSC awards grants to researchers working on projects to inform and educate the industry. The funds we distribute come from producers, distributors and equipment manufacturers. The following is a list of Research Fund supporters who contribute a penny per container through Sugarhill Containers in 2017. Thank you for your support! If you would like to contribute, see page 52.

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Native Harvest, Callaway, MN
Nelson Farms, Cazenovia, NY
New England Maple Museum, Pittsford, VT
New Milford Youth Agency, New Milford, CT

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Nil J. Guillet, Oxford, CT
Norman's Sugar House, Woodstock, CT
Norris Sugarworks, Starksboro, VT
North Franklin Maple, Franklin, NY
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The Warren Farm & Sugarhouse, N. Brookfield, MA
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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.

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Consolidation in the Maple Industry

In November, Canadian sugar refiner Rogers Sugar Inc. purchased Decacer, an eastern Quebec business that bottles and distributes maple syrup for $40 million, in an effort to meet growing demand for natural sweeteners.

In August, Canadian sugar refiner Rogers Sugar Inc., parent company of Montreal's Lantic Inc., purchased L.B. Maple Treat Corp. for $160.3 million. This gives Rogers two bottling plants in Quebec and one in Vermont, along with distribution centers in Canada, the U.S. and Australia.

Court Rules Against Challenge to Misleading Labeling Claims

A U.S. federal court has ruled that, even though Quaker Oats "Maple & Brown Sugar" instant oatmeal contains no pure maple syrup or maple sugar, the company did not engage in false advertising. The lawsuit had sought to disallow labels that mislead consumers into believing that products contain the premium, all-natural ingredients.

But U.S. District Judge Philip S. Gutierrez sided with Quaker, saying that federal law allows for this type of labeling, writing that "Federal law expressly permits labeling to describe 'the primary recognizable flavor(s), by word, [or] vignette,' even if the product 'contains no such ingredient,' The Court finds no allegations in the complaint to suggest that Defendant has not abided by the FDCA in labeling and marketing the Products. It has described the primary recognizable flavor—maple—both by word and by the image of a pitcher of syrup. It is permitted to do this so long as the flavor is appropriately labeled as 'naturally' or 'artificially' flavored which…Defendant has done."

The ruling further said that state laws that are stricter than the federal law are not enforceable, as the federal regulations pre-empt them. "It is easy to see why Congress would not want to allow states to impose disclosure requirements of their own on packaged food products, most of which are sold nationwide. Manufacturers might have to print 50 different labels, driving consumers who buy food products in more than one state crazy."

Calendar of Upcoming New York Schools and Workshops

January 5-6: New York State Maple Conference, Verona NY, Contact: Keith Schiebel; kschiebel@vvsschools.org or go to cornellmaple.com

January 13: Western NY Maple School, Contact: Deb Welch, Cornell Cooperative Extension of Wyoming County, 401 North Main Street, Warsaw NY 14569; 585-786-2251; djw275@cornell.edu

January 19: Lewis County Maple Production for the Beginner, Contact: Michele Ledoux, Cornell Cooperative Extension Lewis County, 5274 Outer Stowe Street, P.O. Box 72, Lowville, New York 13367; 315-376-5270; mel14@cornell.edu

January 20: Lewis County Maple School, Contact: Michele Ledoux, Cornell Cooperative Extension Lewis County, 5274 Outer Stowe Street, P.O. Box 72, Lowville, New York 13367; 315-376-5270; mel14@cornell.edu

January 26: Maple School at the Miner Institute, Contact: Michael Farrell, Ph.D., The Henry II and Mildred A. Uihlein Director of The Uihlein Forest, 157 Bear Cub Lane, Lake Placid, NY 12946, mlf36@cornell.edu Office (518) 523 9337 Cell: (518) 637 7000

January 27: Maple Expo- St. Lawrence County, Contact: Cornell Cooperative Extension, 1894 State Highway 68, Canton, NY 13617-1477; 315-379-9192

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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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