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Ropy Syrup
Why NASS Matters
Marketing Maple

The Newsletter of the North American Maple Syrup Council

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Greetings from your President

I have just recently returned from our meetings in Concord New Hampshire. I would like to thank David Kemp and the team of maple producers, spouses, family, and many other volunteers from the state of New Hampshire for putting on a wonderful conference and event. The weather was wet and chilly but we managed to get through it. It takes a team of focused individuals to carry out and put on an event like this and it was a job very well done.

Our stay in Concord had a full agenda. Many meetings were held and memories were shared. A lot of folks chose to enter the ever-popular maple syrup and products contest. Although I didn't get an opportunity to judge this year's event, I did hear that many producers still need to work on grading and densities. I encourage every producer out there to attend a grading school put on by Kathy Hopkins and Henry Marckres. The Minnesota Association is hosting one before next years AGM. We have to be better at grading and checking our syrup. No need to have any one disqualified before the tasting even begins. Congratulations goes out to all those who entered and won prizes, I know there were many. *(See pg. 35.)*

During our annual banquet two individuals from the maple industry were named to be inducted into the Maple Hall of Fame. A special congratulations goes out to Kathy Hopkins from the University of Maine and Michael Herman of Turkey Hill Sugarbush Ltd. Both have contributed tremendously to the maple industry over the years. A special award was also given to Dave Chapeskie on behalf of the IMSI. Dave has served as their Executive Director for more than ten years and will be retiring in the new year. Thank you, Dave, for all your help and contributions to the maple syrup industry.

Eric Randall was given a "Special Recognition Award" on behalf of the NAMSC. Eric is still serving the Council as Past President and has contributed immensely to the maple industry for a long time. I have known Eric now for quite some time and still rely on his input and feedback regarding our organization on a regular basis. Thank you, Eric, for your continued friendship and support. Your award is well deserved.

This year we made some changes to our meeting format and added a guest speaker and a presentation. Commander Joseph Frost from the U.S. FDA did a well-received presentation on "Understanding the Food Safety Modernization Act for Sugarmakers" and Gary Graham of Ohio State University did a presentation on "What Makes a Successful Volunteer Maple Association." Both topics were of great interest and well-presented. These presentations are available on our website at namsc.org.

Our website continues to be reworked and modified, and we have launched a new tool for the industry – mapleresearch.org. This database is a searchable collection of articles, videos, tools, and other resources about all aspects of maple syrup production. We continue to have our teleconference calls throughout the year, discussing the ongoing issues at hand, as well as

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committee teleconferences where needed.

Please continue to report back to your member associations on what NAMSC is about and all it does for the industry. We do not tell the world enough of what we do and it would be great if we could expand our membership base and be a better and larger organization. We are providing our members with a great deal, but there are strengths in numbers and we can provide more if we can grow and increase our reach. Please continue to give to the Research and Educatoin Fund and thank you to those who do faithfully. If it weren't for the select few who contribute annually, we would struggle to continue our efforts. Our format for funding research projects has changed slightly. We are now offering funding to our members to help with the development of educational materials and or resources. *(See pg. 34.)*

A lot has taken place over the last year and a lot more needs to be done. I am confident with the team of delegates and officers we have before us we can achieve a lot. Thank you to the Executive Committee – Mike, Debi, Joe, Eric, and Winton – for a great year. I look forward to the next one ahead.

All the best to everyone this coming Holiday Season! Have a wonderful New Year and a bountiful maple crop in 2019!

Regards,
David Briggs, President, NAMSC

Cover photo: *Makenna Boliver.*

Research: Syrup production

Chemical and microbial characterization of ropy maple sap and syrup

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Centre de recherche, de développement et de transfert technologique acéricole Inc. (Centre ACER)

Ropiness of maple syrup is a phenomenon that can occur several times in the season. The alteration known as "ropiness" is characterized by a viscous, thick, slimy/jelly-like texture which, although not noticeably altering the taste, renders the product unpleasant in terms of mouthfeel. Ropy maple syrup is unsaleable according to Quebec's current regulation, causing it to be discarded and leading to a substantial loss for the industry (Quebec, M-35.1, r. 18, a.17). Year after year, this type of defective syrup is produced to varying extent. A syrup is graded ropy when the length of the string is equal or above 10 cm (http://www.centreacer.qc.ca/Service/document-formulaire). It is automatically graded as improper and must be destroyed.

Ropy maple syrup is generally caused by fermentation of bacteria present in sap (Fabian and Buskirk, 1935). These bacteria possess the ability to produce exopolysaccharides (EPS) in maple sap resulting in a stringy maple syrup after concentration. Several bacteria were found to contribute to the development of stringiness in concentrated maple sap such as *Aerobacter aerogenes*, *Bacillus ,aceris* or *Enterobacter agglomerans* (Fabian and Buskirk, 1935; Edson and Jones, 1912; Britten and Morin, 1995). These bacteria are usually found in the environment of sugarbushes and can develop in improperly handled or stored maple sap (Morin et al., 1993). Polysaccharides (PS) such as dextrans, arabinogalactans and rhamnogalacturonans (Sun et al., 2016; Storz, Darvill and Albersheim, 1986; Adams & Bishop, 1960) were previously reported in maple syrup. Arabinogalactans and rhamnogalacturonans were suspected to mainly originate from cell walls of plants, while dextran was presumed to result from bacterial contamination of sap (Storz, Darvill and Albersheim, 1986).

The aim of this study was to estimate the economic impact of production of ropy maple syrup in the region of Quebec, to more deeply identify and characterize bacteria associated to this type of quality defect, and to study the composition of PS found in stringy maple syrup.

MATERIAL AND METHODS

Sampling

A total of 25 samples were obtained in 2011, including 15 ropy maple syrups, six concentrates and four saps, from several producers in different regions of Québec. It should be noted that sampling sap corresponding to ropy maple syrup was not always possible since ropiness cannot always be predicted from sap or concentrate. Samples were then stored at -20°C until further analysis.

Physico-chemical analysis

Each sample was analyzed for its

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soluble solids (°Brix), pH and viscosity. Light transmittance (at 560 nm) was measured in syrup samples. Ropiness was measured in each syrup sample by measuring the string's length by dipping a spatula into the ropy syrup.

Microbial counts and culture isolation

Dilution and plating of sap and concentrate samples were performed to provide total bacterial mesophilic counts in aerobic and anaerobic conditions, and total bacterial psychrophilic aerobic counts. Specific growth media were prepared to obtain counts of microorganisms of the genus *Pseudomonas* and total yeast and mold counts. The viable cell counts were expressed in terms of log of colony forming unit per millimeter (log CFU/ml). Eighteen different colonies with distinctive morphologies were purified with three subcultures in their corresponding growth medium before storage at -80°C in tryptic soy broth (Difco, NJ, USA) until DNA extraction.

Total DNA extraction

The DNA of bacterial isolates was extracted with the Nucleospin® Tissue extraction kit (Marcherey-Nagel, Düren, Germany). Concentrations of purified DNA were measured using ND-1000 spectrophotometer (Nanodrop Technologies, USA).

PCR Amplification

Amplified 16S rRNA gene was obtained from each isolates by PCR, by using the universal primers F27 (5'-AGAGTTTGATCMTGGCTCAG-3') and R1492 (5'-GGYTACCTTGTTACGACTT-3') (Invitrogen, Carlsbad, CA). PCR amplification was achieved with Taq PCR Core kit (QIAgen, Hilden, Germany) and carried out in a TGradient PCR thermocycler (Biometra, Goettingen, Germany) according to a published protocol (Lagacé et al., 2004).

Cloning and plasmidic DNA extraction

Amplified PCR products were ligated into the pCR2.1-TOPO plasmid, inserted in Escherichia coli and cultured on LB Miller agar for 24 hours at 37°C. Prior to sequencing, plasmids were extracted according to the method described by Holmes and Quigley (1981) and digested with EcoRI enzyme. DNA fragments were then sequenced and partial sequences were obtained. Consensus sequences of 1500 bp were retrieved with InfoQuestTMFP software and identified by comparison to database of DNA sequences with BLASTn (NCBI).

Identification of microorganisms causing stringy maple syrup

Each of the 18 bacterial isolates were inoculated in an 8°Brix maple sap concentrate previously filtered through a membrane (0.22 μm) to remove microbial biomass. Identification of microorganisms responsible for stringy maple syrup was performed with inoculation of each isolate at 106 CFU/ml in sterile 8°Brix concentrate, incubated at 15°C for two days followed by 4°C for four days. Resulting fermented media were evaluated for ropy properties and corresponding bacterial isolates were selected for growth conditions and associated syrup characteristics evaluation.

Fermentation of concentrated maple sap by slimy bacterial isolates and syrup production

Fermentations were done by inoculating selected bacterial isolates at 106 CFU/ml in an 8°Brix maple sap con-

centrate previously filtered through a membrane (0.22 μm). Three incubation conditions were selected: 4°C, 15°C and alternating incubations of 23°C for eight hours followed by 4°C during 16 hours for three days. Syrups were subsequently produced and physicochemical analysis were performed.

Polysaccharides purification and characterization

Three out of the 15 ropy syrup samples were selected for polysaccharides characterization based on the difference between total soluble solids measured by the refractometer and total sugar (sucrose, glucose and fructose) content quantified by high-performance liquid chromatography (HPLC). The greater the difference, the more polysaccharides were suspected to be present in syrup.

Polysaccharides of each syrup samples were purified using HPLC (Waters, Milford, MA, USA). Molecular weights of polysaccharides were estimated by HPLC with a TSK-GEL 4000PWXL column (Waters, Milford, MA, USA) heated at 40°C and using ultrapure water as the eluent at a flow rate of 0.5 ml/min.

Polysaccharides were then hydrolyzed by adding trifluoroacetic acid (TFA) 2N and monomeric saccharides were identified by GC Agilent 6890 equipped with an MS 5973 as detector. Reference solutions of glucose, fructose, mannose, rhamnose, arabinose and galactose were as well used to confirm the peak identification. Results were presented as area percentage out of total areas of identified peaks to demonstrate relative monosaccharide proportions. Peaks were identified using the NIST database (2008) as well as reference solutions of monosaccharides.

RESULTS AND DISCUSSION

Economic impact

Ropy maple syrup volumes may vary from year to year. For the last ten years, a maximum was reached in 2014 with 358,607 lbs. of bulk ropy syrups produced (Table 1). It is important to mention that the amount presented is underestimated since producers tend to destroy ropy maple syrups themselves when they are detected after evaporation. However, in 2014, more than $1 million (CAD) was lost without including those barrels discarded by producers. In total, an estimated more than $5.5 million was lost in production of ropy maple syrup since 2008.

Over the last ten years, the highest proportion of ropy syrups has been classified as dark color syrup, representing 39.77% of total ropy maple syrups (Results not shown). This is followed by amber and medium syrups representing 25.20% and 17.57% respectively, while extra-light and light ropy syrups represented less than 10%. Therefore, the darker the syrup, the higher the probability of ropiness occurrence. Ropy syrup production is an important issue that needs to be addressed.

Microbial counts

Sap and concentrate samples retrieved from sugarbushes producing ropy syrups were diluted and plated to characterize the microbial profile of each sap and concentrate samples (Results not shown). Aerobic plate count ranged from 6.12 to 8.49 log CFU/ml. For most samples, psychrotrophic counts were higher than *Pseudomonas* counts and varied between 6.14-8.41 log CFU/ml and 5.77-7.63 log CFU/ml

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respectively. Other psychrotrophic species are therefore suspected to be present in sap/concentrate samples. Anaerobic plate counts were lower or equal to aerobic plate counts and ranged from 5.05 to 8.56 log CFU/ml. Yeast and mold counts ranged from 2.22 to 5.05 log CFU/ml.

Globally, samples showed a high total bacterial load, with concentrates containing higher aerobic plate counts than saps.

Phylogenetic tree of bacterial isolates

Analysis of 16s rDNA sequences of the 18 isolates through BLASTn revealed that 15 bacterial isolates were Gammaproteobacteria with nine isolates belonging to the genus *Pseudomonas* and six isolates belonging to the family of *Enterobacteriaceae* (Figure 1). Pseudomonas are psychrophilic microorganisms and are usually present in sap throughout the season. *Pseudomonas* genus is generally associated with good quality sap or concentrate (Lagacé et al., 2004, Filteau et al., 2012). Bacterial isolates A and 2 were identified as *Leuconostoc mesenteroides*.

Identification of exopolysaccharides producing isolates

The ability of the isolates to produce ropy slime was tested by inoculation at 106 CFU/ml in filtered 8°B concentrate (0.22 μm) and incubation at 15°C for two days followed by 4°C for four days. The viscosity of resulting concentrates was monitored. Three isolates (A, 2 and N) were able to enhance the viscosity of the concentrate. Isolates A and 2 were previously identified as *L. mesenteroides* and isolate N belonged to *Enterobacteriaceae* family. They already have been reported for EPS production and enhancing the viscosity of the medium in which they were inoculated (Beech & Carr, 1977; Korkeala, Suortti and Mäkelä, 1988; Anderson and Rogers, 1963).

Influence of exopolysaccharides producing bacteria inoculated in maple sap concentrate

To test growth conditions of the selected bacterial isolates in maple syrup concentrate and properties of corresponding syrup, isolates A, 2 and N were inoculated at 106 CFU/ml in 8°Brix sap concentrate and incubated at 4°C, 15°C and an alternation of 23°C for

Year	Total sales of syrups in Quebec (millions lbs)[a]	Ropy syrups (lbs)[b]	% of ropy syrup	Weighted price ($/lbs)[a]	Economic loss ($)[c]
2008	58.772	146,125	25%	$2.20	$321,476
2009	109.373	101,300	9%	$2.74	$277,561
2010	88.078	142,243	16%	$2.74	$389,745
2011	101.869	117,536	12%	$2.78	$326,749
2012	96.138	208,952	22%	$2.80	$585,066
2013	120.324	121,065	10%	$2.89	$349,879
2014	113.722	358,607	32%	$2.84	$1,018,445
2015	107.168	314,134	29%	$2.86	$898,424
2016	148.177	221,659	15%	$2.94	$651,677
2017	152.250	240,013	16%	$2.92	$700,837

[a] Data from economic file, FPAQ (2017)

[b] Estimated by converting the number of ropy maple syrup's barrels (32 gal.us per barrel) produced to lbs.

[c] Estimation based on ropy syrup (lbs) and weighted price ($/lbs) for each year.

Table 1: Estimated economic impacts of ropy maple syrups production, Quebec (2008-2017)

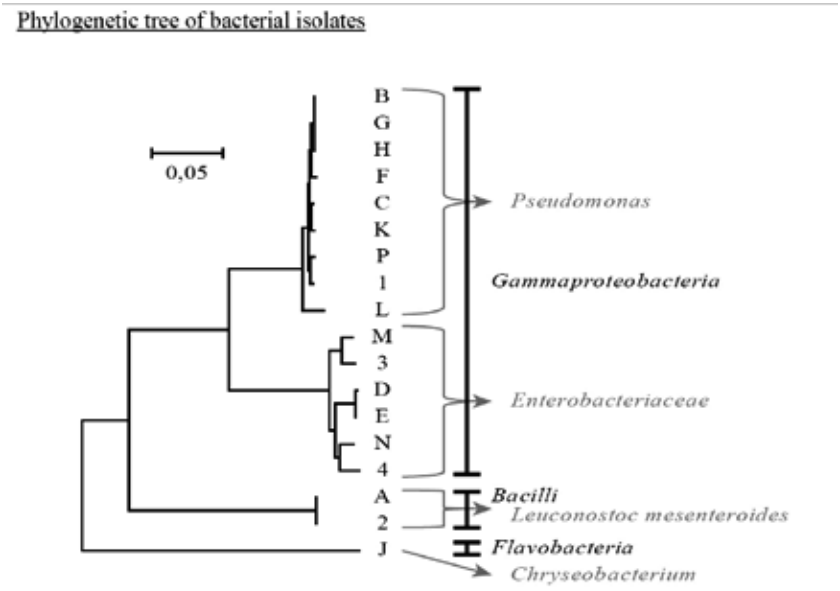

Figure 1: Neighbor-joining phylogenetic tree based on partial 16S rRNA gene of 18 bacterial isolates retrieved from sap and concentrate samples of producers having ropy maple syrup issues.

eight hours and 4°C for 16 hours, over three days for unaerated static fermentations (Figure 2).

Higher viscosity was noticed at 15°C for *Leuconostoc* (isolates A and 2) compared to higher temperature (23°C) after three days of incubation. At 15°C and 23°C, the pH of the fermenting concentrate dropped rapidly to about 5.7 by three days of fermentation (except for isolate 2 at 15°C) whereas at 4°C, the pH did not vary. The pH decrease is suspected to result from metabolic microbial activity and corresponding organic acids production. This sharp decrease is also correlated with bacterial proliferation during fermentation. Indeed, all bacterial isolates counts increased from 6 to about 8 log CFU/ml at all growth conditions except for *Leuconostoc* 2 at 4°C. Control showed a microbial contamination reaching 5.00 log CFU/ml after three days of incubation. The filtration step was therefore not fully effective to remove all microorganisms initially found in the sap concentrate. However, this contamination didn't influence pH or viscosity values at 23°C after three days.

Properties of corresponding syrup

Following inoculation and fermentation with isolates A, 2 and N, concentrates were evaporated into syrups at lab-scale. All syrups corresponding to concentrate fermentation at 4°C and controls are similar regarding °Brix, string length and viscosity (Figure 3). Indeed, average viscosity of a syrup without viscosity defect range from 120 to 160 cP. However, in two cases (*Leuconostoc* incubated at 15°C) evaporation was interrupted due to the extreme viscosity of the boiling solution making the evaporation very difficult forcing us to stop the evaporation. Fur-

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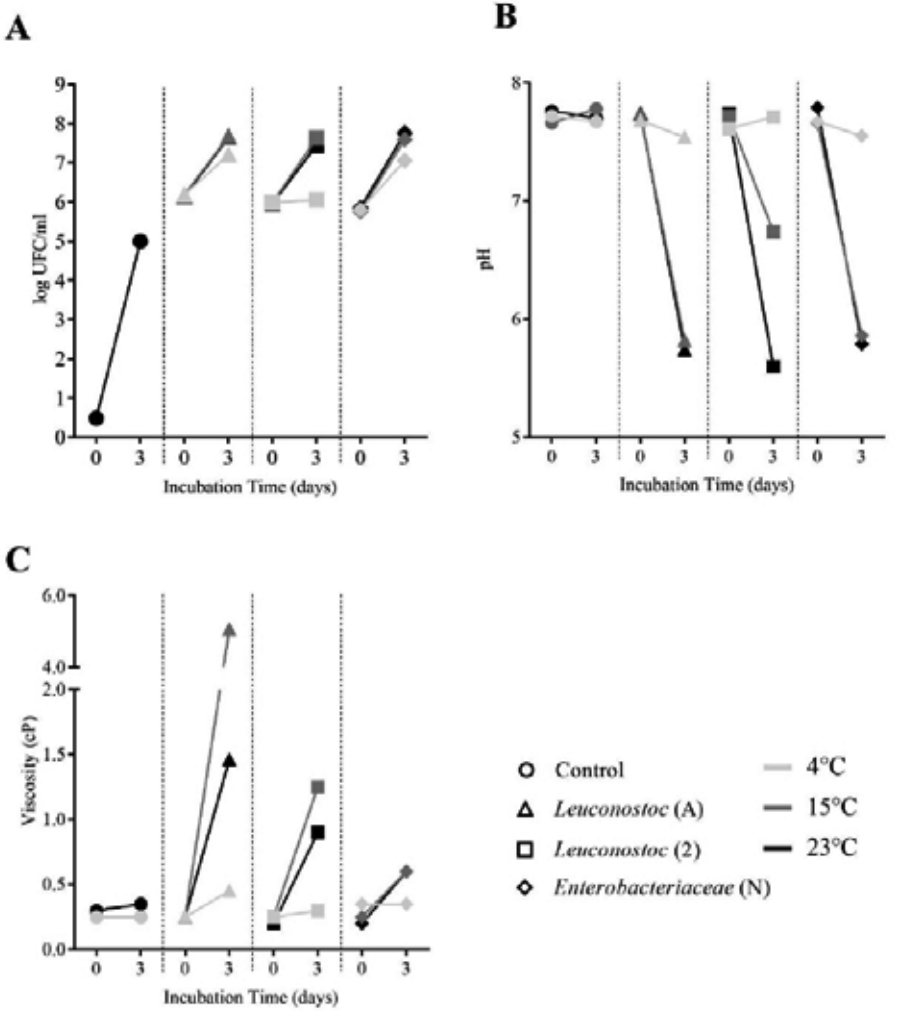

Figure 2: Aerobic mesophilic bacteria count profiles (A), pH (B) and viscosity (C) of sterile concentrate inoculated at 106 UFC/ml with three different bacterial isolates, incubated at three different temperatures over three days.

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thermore, syrup corresponding to fermentation with *Leuconostoc* A at 23°C was too viscous to show a measure by the viscometer in spite of its complete evaporation to 66°B. Fermentation with L. *mesenteroides* isolates produced ropy syrup with strings up to 30 cm long at 15°C and 23°C. Only *Enterobacteriaceae* N gave syrups with shorter strings with 4 and 6 cm long when incubated at 15 and 23°C respectively, making it conform to current regulations and marketable.

Those results suggest that factors promoting ropy slime formation in syrup are mainly uncontrolled fermentation of *Leuconostoc* species at higher

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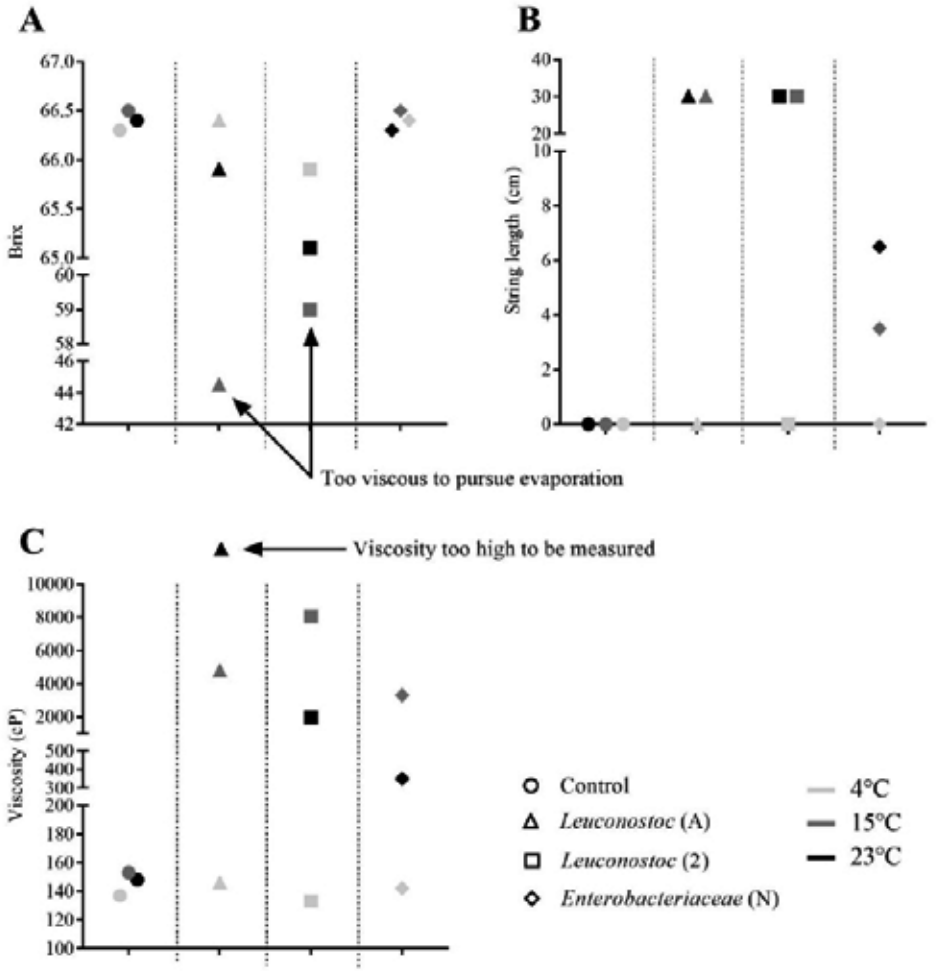

Figure 3: Degree Brix Profiles (A), string length (B) and viscosity (C) of maple syrup produced after inoculating sterile maple sap concentrate at 106 UFC/ml with three different bacterial isolates followed by incubation at three different temperatures over three days.

Ropy: continued from page 15

temperature (15 to 23°C) in concentrate of 8°B. The slime production of L. *mesenteroides* is well known (Bamforth, 2008; Strausbaugh & Gillen, 2008). They are ubiquitous and can produce ropy slime with or without sucrose and they usually need small concentrations of glucose as carbohydrate source (Korkeala, Suortti and Mäkelä, 1988; Giglio & McCleskey, 1953). Furthermore, a slight increase of sap viscosity can contribute to the production of a highly ropy syrup. Various species in *Enterobacteriaceae* family are also EPS producers such as *Enterobacter agglomerans* which was reported to secrete EPS in concentrated maple sap or *Aerobacter* aerogenes when fermented in diluted maple syrup resulted in a production of highly ropy syrup that could stretch up to 10 feet long (Morin et al., 1993,

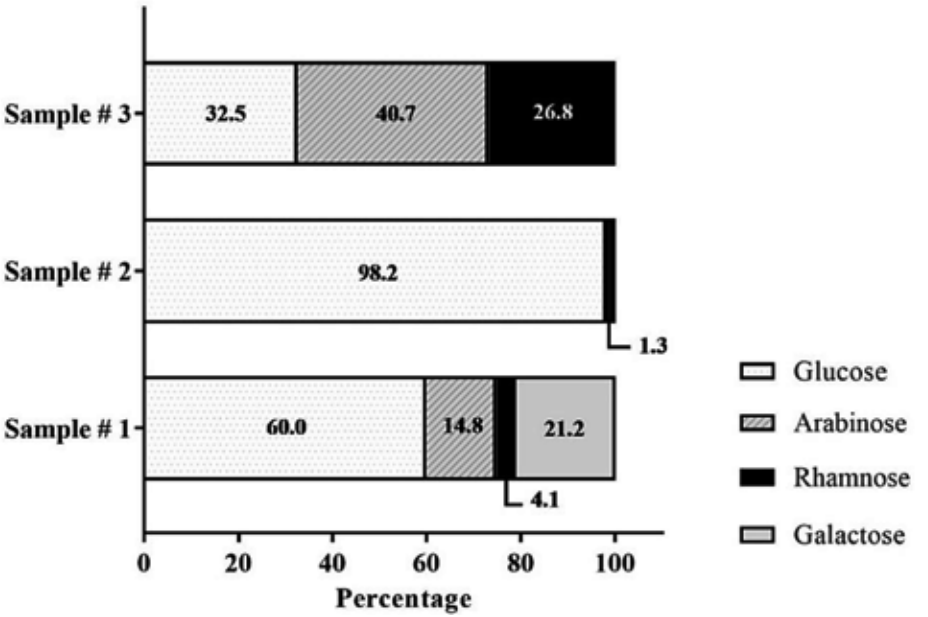

Figure 4: Monosaccharide composition of purified polysaccharides from 3 ropy maple syrup samples.

Fabian & Buskirk, 1935). Storage of sap or concentrate at a lower temperature such as 4°C can be a good way to prevent the growth of slimy bacteria and the production of ropy syrup.

Monosaccharide composition of ropy maple syrups

The polysaccharide (PS) composition of three ropy maple syrups samples retrieved from producers was carried out and each sample contained several PS of different molecular weights (results not shown). Sample #1 showed seven chromatographic peaks with molecular weights ranging from <1000 Da up to more than 800000 Da, suggesting that seven different PS were present in this syrup sample. Sample #2 and #3 showed four and eight chromatographic peaks respectively. This analysis showed that a large variety of PS were present in ropy syrup and each of them could be produced by different microorganisms.

The analysis of monomeric sugars after hydrolysis of PS mix purified from each ropy maple syrup sample showed that glucose was present in each sample, with the highest percentage observed in sample #2 with 98.2%, while it represented 60.0% and 32.5% in sample #1 and #3 respectively (Figure 4). This suggests that polysaccharides of glucose such as dextrans are largely present in ropy syrup. The latter had been reported to be synthetized by lactic acid bacteria (LAB) such as *L. mesenteroides* in sucrose-based medium and in maple syrup (Han et al., 2014; Roberts, 1982; Storz, Darvill and Albersheim, 1986). Dextran was possibly the main PS present in sample #2. Other potential PS present in sample #1 could potentially be galactans and arabinogalactans due to the presence of galactose and arabi-

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nose. Arabinogalactan was previously reported in maple syrup (Adams & Bishop, 1960; Lamport, 1977) and Darvill et al. (1980) explained that PS isolated from primary cell walls of plants are similar to the composition of arabinogalactan present in maple syrup. This leads us to suspect that some (presumably a low portion) PS slimes isolated from ropy syrup can be originated from the maple tree. Sample #3 could include arabinoglucans, rhamnoglucans, and dextrans due to the presence of glucose, rhamnose and arabinose.

CONCLUSION

Slimy PS isolated from maple syrup may be composed of various chemical structures. Some are EPS produced by various bacteria naturally found in the vicinity of the sugarbush such as *L. mesenteroides* or *Enterobacteriaceae*, others could possibly derive from the tree cells. Further chemical analysis on each PS purified would permit to confirm their identification and characterization of slime produced by *L. mesenteroides* and *Enterobacteriaceae* isolates and could provide information on the specific production of EPS by each isolate. Otherwise, the probability to produce a ropy maple syrup increases with the increase of temperature and storage time. A proper handling of sap and concentrate is essential, especially when temperature rises as the sugar season progresses. Controlled storage temperature and cleanliness of sap collection and storage equipment will help prevent ropy syrup production.

Our research hypothesis was that the production of EPS by bacteria in the sap was responsible for the highly viscous texture of the syrup. Some EPS are known and used in other applications in the food industry as texture modifiers or thickeners such as dextran. Such an approach could possibly allow the valorization of this type of non-compliant maple syrup.

ACKNOWLEDGEMENTS

We thank the maple advisors of the *Ministère de l'agriculture, des pêcheries et de l'alimentation du Québec* for their help on sample collection and the *Fédération de producteurs acéricoles du Québec* for providing industry statistics.

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Ask Proctor

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

The leaves on the trees are still mostly green and few have fallen. Does this indicate anything for the upcoming sugar season?

There are a great number of factors that influence the rate of photosynthesis (the "engine" that captures atmospheric carbon and fixes it into sugar), the storage and distribution of the produced carbohydrate (sugar) and its use. Although many times such a clear-cut relationship makes good intuitive sense, trying to understand them all and separate out the effects of one single-factor is extremely difficult.

Maple trees change color and then drop their leaves in response to the environmental cues of cold temperatures in combination with bright light along with decreased daylength. In the case of prolonged leaf retention, presumably this means that leaves could continue to produce sugars longer, that any additional sugars produced will be stored, and that these sugars might be available to be collected by maple producers the next year. However, it is important to remember that if the leaves are still producing sugars beyond the normal time for leaf drop, then it is likely to also be warm enough for other tree physiological processes to be continuing as well, so there will be continuing use of those carbon resources for tree maintenance (respiration, growth, etc). Just keeping that engine (the leaves) running requires some energy, and the efficiency of the photosynthetic process is not likely to be as high at that time of year as it was earlier.

Does this additional stored carbohydrate translate into higher sap sugar in the spring? Perhaps a little, but not as much as you might think. Think of the amount of carbohydrate (starch and sugar) as what the tree puts into its cupboard to use later. Just because there is more food in the cupboard doesn't necessarily mean that the tree is going to take more of it out (remobilize more that sugar) when it comes time to initiate growth of roots, stem, and twigs in the spring. It will remove what is necessary and leave the rest in case it is needed later. Beyond what is required, the rest will remain fixed as starch for longer-term storage. This unused amount can remain there for years to be used later in times of need, or perhaps might never be used during the lifetime of the tree.

At the University of Vermont Proctor Maple Research Center, we have been investigating the interplay of environmental (including weather) and biological factors on sap yield and sugar content. Although this work is ongoing, the approach has been to examine which of a wide array of individual variables are correlated (linearly) with either an increase or decrease in sap yield and sugar content. This includes a mix of well over 100 individual variables (monthly avg/hi/low temperature, precipitation, drought indices, snowfall, snow depth, growing degree days, etc.) which occur both during the sap flow season as well as those that occur over the year lead-

ing up to the sap flow season.

One of those variables we examined was the effects of growing degree days (GDD) over 50°F. For our study site in Underhill, Vermont, increasing GDD in October (our leaves normally drop early-mid October) had no statistical relationship with sap sugar content (SSC) in the following spring. However, increasing GDD in the November (following leaf drop) preceding the sap flow season had a strong NEGATIVE effect on SSC the following spring. Presumably this is because trees had to consume some of their stored carbohydrates to maintain physiological processes later into the year. We also found that higher annual GDD also was associated with statistically lower springtime SSC, which is not surprising given that sugar maple grows best in cool, moist locations. In general, this can be interpreted as hotter weather over the preceding year reduces SSC the next spring.

Teasing out the multiple relationships in these variables and their effects on maple SSC and yield is very complicated, but we gain a better understanding with each year that passes. Our next step is to try to combine what we know about individual factors into a multi-factorial model that encompasses a more realistic picture of which environmental factors are most important and how weather and biological factors affect sap sugar content and sap yield in order to make better predictions of what maple producers might expect in an upcoming season.

Thanks to Dave Hamilton for posing this question. Got a question you'd like answered in a future issue? Email it to editor@maplesyrupdigest.org.

Reporting to USDA/NASS

Dr. Gary Graham, Ohio State University Extension

Research I conducted in 2004 revealed higher taps and production volumes than the 2004 United State Department of Agriculture's National Agricultural Statistics Service (NASS) report. This started my interest in obtaining more realistic maple syrup production numbers for Ohio. NASS does a good job of working with the maple production data they receive, which is a sampling of the total maple producers within a state, but there are limits to accuracy when that sample size is small. Increasing participation in the survey, and convincing producers of the value of accurate reporting, is important to the success of the industry.

Gary Keough, State Statistician, for NASS's New England Field Office wrote a very good article in the October 2016 *Maple Syrup Digest*, entitled "Are NASS Maple Surveys Underestimating Production?" This explains how the data is collected. "The criticism where I have to admit that we probably are underestimating taps and production is that we don't have all the maple producers on our list," Keough says. Many producers don't respond due to privacy concerns. The article explains that this concern is unfounded, and that producer-provided information is kept confidential by Law. Title 7 of the U.S. Code states that NASS data cannot "be disclosed to any other governmental agency or private entity."

"NASS does not play well in the sandbox with others," confirms Cheryl Turner, State Statistician, USDA/NASS Ohio. "We do not share data with any other federal agencies." In fact, within the NASS state office only a couple of people have the authority or ability to access the data which connects personal names to production numbers. The personnel analyzing data never see names and data together. The fear that NASS and the Internal Revenue Service (IRS) are sitting at the same table, or that reporting to NASS will put you on the radar of all governmental agencies, could not be further from the truth. Yet this is what many envision. I believe that the mistrust associated with reporting to NASS is not warranted.

Issues also arise in that too many operations are not known by any authority, so there is no way to count them. Since 2017 was a Census year, hopefully NASS will gather more data, but it will still not reach all maple producers.

For the last three years, the Ohio State University Extension Maple Syrup Production Program has collaborated with Ohio NASS to reach more producers at the annual OSU Extension Ohio Maple Days (OMD) workshops. This collaboration not only aims to reach a larger audience, but also to educate producers on the importance of reporting, in addition to putting the unjustified rumors and misconceptions to rest.

For the last 17 years at the OMD workshops I have circulated a short, anonymous questionnaire to learn who is attending and how I can better serve them with future outreach efforts. For 2016, 2017, and 2018 questions were asked of participants about their response rates to the NASS maple production survey process: (1) Do you report maple syrup production to USDA-NASS? (Yes/No), and (2) If you do not report, please explain why. The participants from year to year at the meetings are not always the same, nor is it tracked as to who returns their questionnaire, so no reference can be drawn between the three years.

Over the three years there were 810 participants, with 44% (358) returning their questionnaires. Of the 358 returned, 90% (323) answered the two-part question on reporting to NASS surveys. OMD participants are split down the middle on the issues of responding to NASS surveys, with 52% answering that they responded to NASS surveys, and 48% indicating they did not.

Of those responding no, 88% added information about why they do not report. Some of the responses are from operations that are below NASS's cut-off level to survey (fewer than 100 taps) or some never knew of it or never received a survey. Others responded "none of their business," "no reason to do it," "for our eyes only," "nothing in it for me," "I don't want to," and "don't give out that information." Some admit they need to do a better job of returning the surveys, responding "I don't take the time," "didn't know how important it was," and "will try to do better." There were also a number of responses indicating it is just too difficult, confusing, and/or time-consuming to do the entire report. Several indicated they would respond if they could just return the maple questions. Doing this is, in fact, an option. If producers return the NASS survey with just the maple production portion filled out, NASS will process those answers.

Knowing my producers as I do, I know that some of the larger operations

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do not return my questionnaire even though it is completely anonymous. I know this as two questions I ask every year are: the "number of taps currently within the operation" and the "number of taps added in the last five years." If the larger producers returned their questionnaire, the number of "taps present" at the Ohio workshops would be much higher. I ask these questions to get a feel for size of operations attending and how many of the overall taps reported by NASS were present at the workshops for developing future training materials. The number of taps reported at my workshops was 34% of the NASS total in 2017, and 30% in 2018.

So what should we do? A simple answer is that more NASS surveys need to be sent out and more producers need to respond to the surveys, but this solves only part of the problem. Once producers receive the survey, they need to get over their fears of filling them out and returning them.

I understand that, in a largely cash-based enterprise, flying under the radar is a normal operating procedure, and that many look at reporting production as a negative. But showing strength in numbers always gives any issue more power. Power in promotion, in obtaining research grants and producer equipment upgrade grants, demand for product, and market potential, and ultimately more income in pockets. I challenge each producer in every maple producing state to complete and submit their NASS surveys and be counted, because it really does matter.

With the Food Safety Modernization Act (FSMA) in place, flying under the radar is not going to work for maple producers anymore. The 9/11 attacks against our country did not cause FSMA, it just awoke the sleeping dog with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, which led to FSMA. Sugarmakers can produce a product under the radar, but if you want to sell that product you are going to have to accept that food safety is on everyone's mind and these regulations are not going to go away, nor is the paperwork that accompanies them.

With FDA registration and some state departments of agriculture implementing a registration processes, being counted is part of doing business. It's possible this will push some folks out of production, but it does not need to – it will be their choice to quit. Record-keeping and accountability are part of the new normal of any entity, especially those producing food. I would not be doing my job of educating producers if I did not help prepare them for what needs to become standard operating procedures. The message is not liked and some let me know this. It is not me or the maple industry pushing the issues onto producers. We all are working hard to keep the industry strong, growing and to keep producers out of "sticky situations."

2019 NYS Maple Conference

The 2019 NYS Maple Conference will be the same great show at a new location. After 19 years in Verona, the Conference is moving just down the Thruway to the New York State Fair in Syracuse. The 2019 event is scheduled for January 4-5. The day-and-a-half event will be hosted by the New York Maple Producers Association in conjunction with the New York FFA Alumni Association and Cornell Maple Program. The conference will follow a similar format as previous years.

The conference's maple trade show will be housed entirely at the State Fair's Horticulture Building, home of the Association's Maple Center facility. More than 60 maple vendors will exhibit some 110 booths and displays of maple equipment including evaporators, reverse osmosis machines, sap monitoring systems, tubing parts and tools, and every supply available to maple producers.

The Conference will feature 40 educational sessions on a variety of topics covering all aspects of producing and marketing maple syrup and maple products. On Friday evening one session will feature a comparison of various methods of making maple sugar candy, and the second session will feature maple marketing, promotion and advertising. Friday night's program will also include a used maple equipment and supplies auction at 6:00.

Conference registration opens at 4:30 Friday night; trade show begins at 4:30 with maple workshops scheduled between 5:00 and 7:00. A live maple equipment auction will be held Friday night at 6:00. Saturday's doors open at 7:30 a.m. with workshops beginning at 9:00. Overnight accommodations are available at Clarion Inn, 100 Farrell Road, just five minutes from the Fairgrounds. Cost of the rooms are $65.99 per night. Phone number is 315-457-8700. Request accommodations under "maple block." General pre-registration for this year's event is $25 for Friday night, $40 for Saturday, or $50 for both days and includes Friday night dinner, Saturday continental breakfast, and Saturday lunch. The full agenda will be available at www.nysmaple.com or www.cornellmaple.com.

Other upcoming NYS Maple events

December 15: Southern Tier Maple Program, Brett Chedzoy, 607-535-7161; bjc226@cornell.edu.

January 4-5: New York State Maple Conference, NYS Fair Grounds, Syracuse NY. cornellmaple.com.

January 12: Delaware County Maple School, Carla Hegeman Crim, 607-865-6531, ceh27@cornell.edu.

January 12: Maple Expo St. Lawrence County, 315-379-9192.

January 15: Maple Production for the Beginner, Ontario County, Russell Welser, 585-394-3977.

January 17: Maple Production for the Beginner, Seneca County, Susan Coyle, 315-539-9251, Smc226@cornell.edu.

January 18: Lewis County Maple Production for the Beginner, Michele Ledoux, 315-376-5270; mel14@cornell.edu.

January 19: Lewis County Maple School, Michele Ledoux, 315-376-5270, mel14@cornell.edu.

January 25: Maple School at the Miner Institute, 518-354-3170.

A Slow Boil: Marketing's Long Game

Olga Peters

You want to sell more product. Right. That means marketing. Right? And marketing means snazzy logos and colorful labels. Right. And a Facebook page. Okay. And...

Stop. Put down the clip art. Walk away from the social media.

Marketing is a long game. It starts before customers open their wallets.

Tools like Facebook, market research, and advertisements are jigsaw pieces. Marketing is the picture on the puzzle box.

A common marketing mistake is starting with the tools: social media, labels, or logos. Instead, marketing starts with: the business story, business goals, and identifying customers.

The why and the where to

Before starting a marketing plan, answer:

- Who are you?
- What do you want to accomplish?
- Who/what is your market?
- How do customers view your brand?
- Which tools will connect customers to your product?

Marketing is about "building an awareness of an affinity of your brand," says Luke Stafford, founder of Mondo Media Works. Based in Brattleboro, Vermont, Mondo Media Works specializes in digital marketing. Stafford says marketing and selling are separate processes. Selling starts once the customer decides to buy a product.

Good marketing pays off over time, according to Stafford. His company rarely signs a contract for less than a year.

Stafford recommends starting by pinning down the businesses' story and establishing its goals – specifically revenue goals. Once these cornerstones are set, other tasks become easier such as identifying ideal customers or calculating a return on investment on a new purchase.

Long-term goals and revenue targets also help reverse engineer how different marketing tools – Instagram, advertising, logos, and others – will connect products with customers, Stafford says.

Relying on word of mouth instead of an active marketing plan is a big mistake Peter Case of Fishhook Communications in Brattleboro, Vermont sees businesses make. "Don't be afraid to talk about yourself," he says.

Remember the old adage, Case says. If people like a product, they'll tell one person. If they've had a bad experience, they'll tell 50.

Telling a story

Stafford, a hobbyist sugar maker, taps approximately 30 trees on his property in Southern Vermont. It's enough to produce eight gallons, he says. Enough for his two little girls and a few Christmas gifts.

Stafford describes "branding" as how customers feel about a company and its products.

Understanding the company's passion, or reason, for making maple prod-

ucts helps sugar makers identify ideal customers.

It's important to narrow your market, Stafford says. "If you try to be everything to everyone, it dilutes your budget."

Take a minute and describe yourself and your business. For example: a 6th generation sugar maker who uses maple syrup instead of cane sugar because of maple's health benefits. You love sugar making because you love being outdoors and teaching your kids about maple. It's likely your ideal customers are also health conscious, have families, and are outdoorsy.

Stafford recommends combining the your story with market research.

Meeting expectations and then expanding horizons

Case reminds producers to look at their products through customers' eyes.

Sugarmakers live close to their products. They know the blood, sweat, and tears that went into each jug of syrup, Case says. Customers, however, just want syrup on their pancakes.

Avoid using industry jargon in marketing, advised Case. Customers don't care about reverse osmosis. They care how the syrup tastes.

When crafting a marketing strategy, producers must first know what their customers expect from their products. Meet that expectation and then expand on it, Case added.

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As an example, run a series of photos on Instagram such as "100 uses for maple syrup." The first image have someone pouring syrup on pancakes. Next, waffles. Then French toast. Once the basics are covered, highlight maple's other uses, Case suggested.

Case advocates for thinking in visuals whenever possible. Images and videos convey a lot of information. This is true for online and print. He recommends looking at YouTube or Lifehack.org for examples.

Building connections

Marketing budgets vary depending on goals and the level of competition. Stafford recommends budgeting 3-12% of a company's revenue as a starting point.

Stafford noted that print, radio, TV, and online advertising have pros and cons, he says. Television and terrestrial radio ads reach a lot of people, especially during sports events. But they are expensive. Facebook has great targeting abilities to match ads with customers. But, consumers are migrating to Instagram. Print "took a dive," but it's coming back.

Other avenues exist for marketing that could cost a producer less than buying ads.

Consider cross promotions and partnerships with other companies. Partner with a restaurant to make everything from cocktails to BBQ sauce. In exchange for maple syrup, the restaurant puts your sugarhouse logo on their menu.

"Social media influencers" can expand a product's reach, too, he says. Companies pay an influencer to tout their products on the influencer's social media platform. "It's very effective in the food space."

Content marketing happens when a company combines their business with information or personality. Examples include emails with recipes, or videos showing how sap is collected.

Connecting with customers builds affinity and loyalty, Stafford says. "Always have a way to capture customers' email addresses."

According to Stafford, customers must be exposed to a product multiple times before they recall it in their minds. Studies vary, he says, from between 12 to 50 exposures.

Breaking out of beige

Logos and other graphics are considered a company's visual identity. In the maple industry, this visual identity is "literally beige," Stafford jokes. Maple producers have an opportunity to stand out with color.

If contracting with a marketing or graphic design firm is cost prohibitive, Stafford recommends checking out online resources such as 99designs.com, or Fiverr.com.

YouTube is a place to go for education, Stafford says. There you can learn everything from how to turn on an iPhone, to drafting a five-year marketing strategy.

Stafford says the biggest marketing mistake he sees is when businesses do the steps in the wrong order.

Strategy and reflection first, he stresses. A flashy logo does little good if the business owner lacks a customer base.

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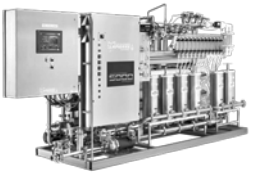

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Being the trendsetter

What about companies who want to add a new service such as shipping or expanding into an international market?

Stafford's advice: 1) Plan ahead. 2) Contact the local sugarmakers' association for research materials such as white papers or access to databases. 3) Talk to the sugarmakers who have already done what you hope to do. Learn from them.

Finally, Stafford recommends patience. Ultimately, good marketing builds trust and connections with repeat customers, he says. Loyalty takes time.

Effective marketing strategies balance consistency with surprise, Case says. Still, the easiest way to keep an eye on a product's market is to control it. "Be the trendsetter," he says.

Marketing Advice from Sugarmakers

"Marketing is not random, it's intentional."

Amy Fideldy, TimberSweet Maple, Cohasset, MN

This husband and wife team sells maple products, apples, and pick-your-own blueberries. They set 3,000 taps. They sell direct to customers from the farm, farmers markets, and craft shows. They do very little shipping. Their tips:

- Know yourself. The Fideldys don't ship a lot of product because it's their least favorite thing to do. They only produce as much syrup as they can on their own without having to hire help.
- Don't hide behind texts and emails. Get out. Speak directly to people.
- Evolve your approach as your goals and the market change.

"Different venues bring in different types of customers."

Michael and Jen Bryant, Hilltop Boilers, Newfield, ME

Hilltop is operated by Jen, her husband Michael, and his brother. They have between 1,200 and 1,500 taps. Michael is committed to customer service and selling product online. Recently, Hilltop joined a program called Farm Drop. Farm Drop connects farmers with local customers. Weekly, farmers post their product on Farm Drop's website. Customers submit orders. Then, the farmers drop the orders off at a central location.

- Partnering with organizations like Farm Drop can expand a producer's reach. Farm Drop promotes the products on behalf of participants.
- Keep your marketing materials current. Michael constantly updates the farm's website. He edits text so the site triggers the algorithms of search engines like Google.
- Experiment with different tools: Jen uses Facebook to post photos and videos. Through pictures of boiling or haying, customers experience the farm "vicariously." Michael finds that advertising on the radio is great for special events but he uses glossy magazine ads to attract corporate customers.

- Review businesses outside the maple industry to see how they market products.

"Whatever you do, pay attention to details."
Pam Green, Green's Sugar House, Poultney, VT

Green chairs the Vermont Sugar Makers' Association. She is also the vice-president of the International Maple Syrup Institute. Green and her husband's sugaring operation has approximately 5,000 taps. They retail all their product from the farm, at craft shows, and online sales through their website.

- Quality: Pretty jugs and labels attract customers – once. Quality syrup brings them back.
- Details make the difference. Consider every aspect of your business that customers see from the colors of your logo to the shelving the syrup sits on.
- If you're a small operation, keep your early investments small.
- Don't have your own logo? No problem. Most maple associations have logos or seals for members to use.
- Plan at least five years ahead. Jumping in without planning costs more money.

"See the vision, then draw the picture."
Arnold Coombs, Coombs Family Farms / Bascom Family Farms, New Hampshire & Vermont

Coombs is the director of sales and marketing at Bascom's, one of the largest maple companies in the U.S. For years, Coombs' customers asked "What's new in maple?" Recently, Coombs Family Farms introduced a sprayable maple syrup. The patented container produces a stream of pure syrup. No propellents or other additives are used. At the time of printing, Coombs had shipped approximately 20,000 units.

- Be clear about goals. Ask: Why am I doing this? What do I want to accomplish with this effort? How will this sell more maple?
- Conduct an ROI – return on investment – on everything you do. Remember to factor in the cost of your own labor.
- Let visuals tell a story. Use text to reinforce them.
- Make customers part of your marketing plan. Ask questions. Listen.
- Customers know when you're hustling them. Don't. Be authentic.
- "There are no home runs in marketing. It's all bunts and singles."

Call for Proposals: NAMSC Education Grants

North American Maple Syrup Council member associations are invited to apply for grants, up to $5,000, to support educational projects meant to help maple producers make high-quality products safely, efficiently, and sustainably. The types of projects we will consider include, but are not limited to workshops, written materials, and videos that provide clear instructional guidance for implementing best practices and proven innovations. Topics related to any element of maple production are welcome, including, but not limited to, forest management, tapping, sap collection, syrup production, and value-added products.

Proposals should be 2-5 pages long. Brevity is appreciated, though not at the expense of a clear and thorough explanation of the proposed project and its value to sugarmakers. Proposals should include:

- A description of how the funds will be spent.
- A description of the final product, and how it will be made available to sugarmakers (NAMSC resources, including the Maple Syrup Digest, our websites, and our annual meeting are available to help support distribution).
- A budget for the project, including any funds from sources other than the grant.
- A timeline for the project.
- A brief letter of commitment from any presenters (extension agents, specialists, etc.) who will be engaged in the project. Applicants are encouraged to partner with experts and educational institutions as appropriate.

Criteria used to evaluate proposals will include:

- Demonstrated need among producers.
- Commitment to representing the most current industry standards.
- Applicability to a broad range of producers.
- Ability to distribute the materials in accessible formats.
- Capacity of applicant to deliver project as proposed.

Requests for costs to cover capital expenses, such as cameras or computers, will not be considered, nor will projects to promote a single brand of equipment.

Proposals are due by January 15, 2019 and must be submitted electronically to winton@massmaple.org. Final decisions will be made by the NAMSC education committee. These are one-year grants, with an expected announcement date of March 1.

Only applications from NAMSC member associations will be considered. Partnerships between multiple member associations are welcome. Associations may only receive one grant through this program every three calendar years.

This is the first time these grants are being offered. Questions while preparing proposals are welcome, at winton@massmaple.org.

2018 NAMSC Maple & Photo Contest Winners

Golden/Delicate Syrup
1. Steven Woods Elmwood WI.
2. Keith Dufresne Mass.
3. Sean Davan Woodsville Maples

Amber/Rich Syrup
1.Jacques Couture, Westfield, VT
2. Stu & Corrine Peterson, Bent, MN
3. Kevin Brannen, Smyrna, ME

Dark/Robust Syrup
1. David Hively, Salem, OH
2. Richard & Pam Green, Poultney, VT
3. Steven Woods, Elmwood, WI

Very Dark/Strong Syrup
1. Marty Boisvert, Pittsfield, NH
2. Jacques Couture, Westfield, VT
3. Fred Hedmark, Florence, WI

Maple Candy
1. Howard & Jeanne Boyden, Conway, MA
2. Aggie Sojka Sperey, Chardon, OH
3. Keith Dufresne, MA

Maple Cream
1. Keith Dufresne, MA
2. Jacques Couture, Westfield, VT
3. Kevin Brannen, Smyrna, ME

Stirred Sugar
1. Kevin Brannen, Smyrna, ME
2. Missy Leab, Hancock, ME
3. Mike Moore, Canterbury, NH

Best of Show
Jacques Couture, Westfield, VT

PHOTOS

Maple People:
1. Kate Wilcox
2. Edie Kemp
3. Sylvie Pare

Creative Maple:
1. Kate Wilcox
2. Brad Rice
3. Frank Merriman

Sugar Bush Scenes:
1. Jo Ann Merrifield
2. Frank Merriman
3. Rusty Colby N.H.

Minutes of the 2017 NAMSC Annual Meeting

October 22-25, 2017, Lévis, Quebec

The 59th annual meeting of the North American Maple Syrup Council (NAMSC) was hosted by New Hampshire Maple Producers Association, Inc., concord, New Hampshire.

The conference was held in conjunction with the 44th annual meeting of the International Maple Syrup Institute (IMSI). Meetings began on Thursday October 25 with the NAMSC and IMSI Executive Committees discussing issues facing their respective organizations and industry as a whole. Discussion centered on the topics of ACER grants, IMSI survey of members, Canadian Roundtable, Canadian investment in advertising of $2.9 Million, NAMSC Communication and Education committees, Maple Museum updates, maple tariffs, and search for an IMSI Executive Director.

October 26 consisted of NAMSC committee meetings: Finance, Executive, Education, Communications, Strategic Plan and Research Committees

There was a large equipment trade show and ten technical sessions including: University of Vermont Proctor Maple Research Center Overview, presented by Dr. Timothy Perkins; Update of the Asian Longhorned Beetle Infestation and Response, Ryan J Vazquez; Strategies to Mitigate Climate Change Impacts on Sap Yield, Dr. Abby van den Berg; Tread Lightly-the Effect Soil Compaction Can Have on Sugar Maple, Kyle Lombard; Time in a Bottle: Three Generations of an Old-Time NH Sugarhouse, Eric Aldrich; Tasting for Off Flavors and Grading Maple Syrup, Kathy Hopkins; What Does the Food Safety Modernization Act Mean for Your Business? Mary Choate and Heather Bryant; 2018 Cornell Maple Program Research and Extension Update, Stephen Childs; Agritourism, Risks and Liability Concerns, Michael N. Bertolone; Maple Finances and Business Viability, Mark Cannella; and Overview of Regional Climate Change Projections and Impacts to the Spring Season, Dr. Elizabeth Burkowski.

David Briggs (NB), president of NAMSC opened and welcomed all to the 2018 Annual Meeting. Ray Bonenberg, (ON) president IMSI and Dale Smith, (NH) New Hampshire Maple Producers Association welcomed everyone to New Hampshire.

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, (A)
- Indiana Maple Syrup Association: David Hamilton (D), Ron Burnett (A)
- Maine Maple Producers Association: Lyle Merrifield (D), Kevin Brannon (A)

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- Massachusetts Maple Producers Association, Inc. : Winton Pitcoff (D), Howard Boyden (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)
- New York State Maple Producers Association: Dr. Eric Randall (D), Helen Thomas (A)
- Maple Producers Association of Nova Scotia: Avard Bentley (D), Kevin McCormick (A)
- Ohio Maple Producers Association: Dave Hively
- Ontario Maple Syrup Association: Brian Bainborough (D), Bob Grey (A)
- Pennsylvania Maple Syrup producers Council: 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: Thomas Buck (D), Robert Burdick (A)
- West Virginia Maple Syrup Producers Association: Mike Rechlin (D) Jamie Schuler (A)
- Wisconsin Maple Syrup Producers Association, Inc. : James Adamski (D), Joe Polak (A)

Secretary J. Polak reported 17 member states and provinces were present and 0 absent.

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The **minutes** of the 58th Annual Meeting held at Levis, Quebec were presented as written by J. Polak. M/S D. Hamilton/C. Pichette. Passed. The minutes of January 24, 2018 conference call were presented as written by J. Polak. M/S E. Randall/L. Merrifield. Passed. Minutes of meeting Croghan, NY May 11, 2018 presented as written by J Polak. M/S R. Wenzel/D. Kemp. Passed. Minutes presented conference call September 5, 2018 presented as written by J. Polak. M/S L. Merrifield/R. Wenzel. Passed

Financial Report: The report of the NAMSC General Fund FYE August 31, 2018 was presented by J. Polak, as follows:

- Funds in checking account $30,739.06.
- Cash receipts of $86,487.46 including transfers from other accounts and disbursements of $82,899.89, leaving a net gain of $3,587.57.
- Income is based solely on dues from member states and provinces.
- *Maple Syrup Digest* receipts $31,373.57 and disbursements of $26,329.35 with a net gain of $5,044.22.
- Balance of investment accounts (dedicated for special projects) $88,801.12.
- NAMSC Research Fund balance in savings account: $68,558.37. Receipts $39,341.93 and disbursements were $50,040.08.

Motion made to accepted treasurer's report pending review of Audit Committee. M/S E. Randall/D. Thomas. Passed.

Research Committee Report: W. Pitcoff reported the money to fund research projects comes from voluntary contributions from individuals and

businesses. The majority of the funding is received through the NAMSC Research Alliance Partner Program and the penny per container program.

The NAMSC Research Fund committee received four (4) proposals. One (1) proposal was chosen for funding totaling $33,418.00: An Effective Defoamer for Organic Maple Syrup production, Dr. Abby van den Berg, University of Vermont Proctor Maple Research Center. One year funding.

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 16 Alliance Partners: 3 Container Manufacturers (Sugarhill (MA), D&G USA (VT), Inovaweld (QC)), 3 Dealers (Maple Hollow (WI), Haigh's (MI), Sugarbush Supplies (MI)), 3 Equipment Manufacturers (Lapierre (QC),CDL (QC), Sunrise Metals (IN)), 1 producer (Randall's Maple LLC (NY) (, 6 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).

Motion ade to create a line 307 in the NAMSC Budget to establish an "Education Fund." The new fund will provide resources for funding educational projects through a formal request for proposal process. The NAMSC member associations must be in good standing to apply. The funds proposed for this fiscal year was $10,000, with $5,000 coming from the Education line and $5,000 from the Maple Digest line. A committee will be established to develop the RFP, which will include requirements that materials produced through these grants be made available to all NAMSC member associations and that NAMSC be credited as a supporter / funder. Applicants associated with the state or provincial association must recuse themselves from submitting or considering proposals. The RFP will be developed in time for posting in the December 2018 *Maple Syrup Digest*. A committee will be established to review and propose grants for review and vote of the Council. Awards will be disbursed by March 1, 2019. M/S W. Pitcoff/D. Hamilton. Passed.

Motion made to rename the NAMSC Maple Research Fund the NAMSC Maple Research and Education Fund. Develop an RFP process to allow Council members to apply for education grants. Allow financial donors that grow the fund indicate whether they would like their contributions be dedicated to education or research or at the Council's discretion. M/S W. Pitcoff/D. Hamilton. Passed.

W. Pitcoff reported maple associations or individuals can subscribe online to the ***Maple Syrup Digest*** at maplesyrupdigest.org. Editor is looking for photos, articles, advertising, classifieds and other printable information. Color supplements that are being distributed to the *Digest* have been received well. Copies are available to member associations and are available for purchase. The *Digest* is posted on line online one year after date of publication.

Strategic Plan: M. Girard reported the Strategic Planning initiative began at the year 2000 Annual Meeting in VT with Luc Lussier (QC) chairing the first planning committee. There have been annual updates to the strategic

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plan over the past 18 years including a change of meeting structure approved in 2018. Five meetings were held in 2018 including the annual meeting in October, delegate's conference call in January, a meeting at International Maple Museum Centre opening in May, a conference call meeting in September, and a formal board meeting the day before the annual meeting. We have added a keynote speaker to the annual meeting agenda and workshops. M/S to accept Strategic Plan as presented D. Thomas/J. Adamski. Passed.

International Maple Museum Centre: One of the large rooms on the second floor of the museum has been renovated with help of a $5,000 donation from NAMSC in 2018. A total of $15,000 has been donated from NAMSC for the renovations and audio visual equipment. The new "North American Maple Syrup Council Room" houses placards, 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.

Convention Committee: J. Polak stated information of previous conference committees is available by contacting J. Polak or M. Girard.

Recipients of 2018 **ACER Grants** reported on their projects. See details in October *Maple Syrup Digest*.

Education Committee: Missy Leab reported on *Maple Syrup Digest* supplements, Maple Manual updates, off flavor kits, mapleresearch.org, translations of information, train the trainer programs, and maple video game available on our phones.

Commander Joseph Frost of USDA presented **"Understanding the Food Safety Modernization Act for Sugarmakers."** He spoke about conducting field inspections of food facilities and working with producers and processors to navigate the Preventive Controls Rule of the Food Safety Modernization Act (FSMA). If you need to register with FDA, this must be done every even year between October and December. This can be done online at no cost.

Specialists report: Steve Roberge, University of NH reported discussions centered on forest fent caterpillar, food safety, 3/16" tubing life span, and loss of extension support for maple industry. Issues: 1. Request producers contact universities to support maple. 2. Tubing disposal. 3. Delivery of content. 4. Forest Tent Caterpillar infestation - consult forester about tapping. 5. General business management. 6. Leverage sources for research. 7. Schedule specialists meeting close to tech sessions at annual conference.

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Audit Committee: D. Thomas reported committee reviewed all financial accounts of NAMSC. All accounts are in order. M/S E. Randall/D. Thomas Passed

Budget was presented by Finance Committee, J. Adamski, chair. Income and expenses of General account and *Maple Digest* will remain about the same. Research Fund will spend less than last year. Budget shows an increase of $4,860.00.

OMSPA's Maple Grading Module: Ontario Maple Syrup Producers Association would like to develop a training course for maple syrup producers on how to evaluate the quality of maple syrup. The course will be configured with the maple judging school that has been established by maple extension specialists and researchers at the University of Maine, Vermont USDA and Cornell University NY. OMSPA will collaborate with course instructors from the annual school and judging competition. The University of Maine has offered to assist Ontario in development of a suitable course for producers. Ontario will compensate the Grading School in the amount of $2,500. The OMSPA course will be delivered at upcoming fall and winter maple Information Day meetings in 2018 and 2019, and provide a slide deck in .pdf format to be used as a "Train the Trainer" tool that can be also presented in Duluth, MN. Motion to provide $5,000 from Education Fund with all materials to be available to NAMSC member associations and credit to go to NAMSC M/S L. Merrifield/T. Buck Passed

NAMSC Website is being redesigned with a new focus report by K. Zander. The new site will better reflect the work of NAMSC for local associations. There will be a "member's only" section.

J. Polak reported on **waste water issues** developing in Wisconsin and in other states. It is an issue that needs to be addressed. The EPA has rules in place for discharging waste water that are being applied by some state inspectors to sugarhouses without an understanding of the industry and the implications of the rules on maple syrup production. J. Polak reported that the EPA has rules governing this in a number of places, none address maple specifically. The maple industry should be proactive and develop guidelines for inspectors.

Gary Keogh, NASS, **National Agriculture Statistics Service**, reported worldwide production was down $2.6 in 2018. Most states reported a longer season than average. Total value of crop is ½ billion dollars (including Canada) Refer to nass.usda.gov for more information

A presentation was given by Dr Gary Graham on **"What Makes a Successful Volunteer Maple Association?"** The presentation included the attributes of a strong volunteer maple association. The presentation stressed the need for strong leadership, an active membership, quality meetings, member benefits, etc.

Committees appointed by President D. Briggs:

Audit Committee: Debbi Thomas, chairman, Jim Adamski, Mike Rechlin, and Fred Hedmark.

Convention Planning Committee: Joe Polak, chairman, Ralph Fideldy, Michael Girard, and Michel Labbe.

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Education Committee: Missy Leab, Chairman, Brian Bainborough, Winton Pitcoff, Steve Childs, Jesse Randall, Karl Zander, Dave Hamilton, and Debbi Thomas.

Finance Committee: Jim Adamski, chairman, Mike Girard, 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, Cecile Brassard Pichette, and Tom Buck.

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.

Associate members appointed: Terms expire 2021. Angie Considine, Jacques Couture, Kathryn Hopkins, Danial Lalanne, Eric Prudhomme, Todd Leuty, Helen Thomas, John Kuhn, Rick Fogle, Peter Gregg, Mark Cannella, Navindra Seeram, Loise Poitras, Jamie Schuler, Peter Smallidge, Missy Leab, Fred Hedmark, Thomas Spink.

Motion made to accept the request by Ontario Maple Syrup Association to host the NAMSC/IMSI conference 2025. M/S D. Thomas/J. Adamski

Future Host States and Provinces: 2019: Minnesota, 2020: Wisconsin, 2021: New York, 2022: Massachusetts, 2023: Maine, 2024: Michigan, 2025: Ontario.

2019 Minnesota: Invitation was extended to attend the NAMSC/IMSI conference in Duluth, Minnesota, October 21-24, 2019.

Motion made to adjourn. E. Randall.

Annual Banquet was held and the NAMSC presented the NAMSC Special Recognition Award, presented to Dr. Eric Randall. Eric's family has documents of his family making maple syrup since 1848. He earned his PhD in Botany from SUNY-Buffalo State in 1973. A plant taxonomist/anatomist by training, he has taught, authored or reconstructed nearly two dozen plant science and forestry courses at both undergraduate and graduate levels.

He was awarded a research grant from NAMSC 30 years ago to study the impact of ultrafiltration of maple sap prior to reverse osmosis. Much of his work is now used by the industry. Today he serves as a consultant to US Department of Interior, Federal Invasive Species Council. He conducts research on invasive plant species within Finger Lakes Region of New York and participates in educational outreach programs.

Submitted by Joe Polak
Secretary/Treasurer NAMSC

The slide show presentations offered by Dr. Gary Graham and Commander Joseph Frost are available at namsc.org.

International Maple Syrup Institute News

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

IMSI Continues Search for a New Executive Director

The IMSI is continuing the search for a new Executive Director until a suitable candidate is found. In order to ensure a smooth transition in management, Dave Chapeskie has been contracted to serve as Interim Director from January 1 to May 31, 2019. Dave will provide mentoring, as needed, for the new Executive Director, and continue to assist with the management of complex and sensitive files during this transition period.

Maple Syrup Supply, Demand and Pricing

Growth in maple syrup production capacity in the U.S. is estimated at one million taps. Some believe that the USDA National Agricultural Statistics Service data for production capacity is significantly underestimated in some U.S. States.

A planned expansion of five million taps in Quebec is underway with about 3 million taps already installed. Production capacity in Ontario and New Brunswick is increasing with a few large start-ups in Ontario.

Maple equipment vendors reported that new maple equipment bookings are extending into 2019. Tariffs imposed by the U.S. on aluminum and steel are putting some upward pressure on prices of maple equipment containing these materials.

Going into the 2018 production season, supply of maple syrup was very good in most areas, with about 80 million pounds of maple syrup in the Federation's strategic reserve. Some packers/processors have held an inventory surplus over the past two years. This may lead to some rebalancing of supply and demand in 2018/19. It is expected that there will be a sufficient supply of maple syrup to meet demand through to the 2019 maple production season.

The Federation of Quebec Maple Syrup Producers reported that sales from the strategic reserve were stable when compared to 2017. Canadian exports of maple syrup were about 11% higher in 2018 compared to 2017.

Maple packers report that the demand for maple syrup and other real maple products remains very good and is gradually increasing both in North America and overseas. Use of real maple syrup in a variety of food products is growing and is noticeable in retail outlets both in the US and Canada. Profit margins, however, are thin in some circumstances and the marketplace is very competitive. Prices for packaging are increasing significantly.

U.S. and Canadian Tariffs Affecting the North American Maple Syrup Industry

Tariffs imposed by the U.S. government on aluminum and steel imports from Canada remain in place, despite the announcement of a new U.S., Mexico, Canada (USMC) trade agreement to replace NAFTA. Counter-tariffs on maple syrup imports to Canada from the U.S. also remain in place. Hopefully, these tariffs will be removed with further bi-lateral negotiation between the U.S. and Canadian governments.

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FDA Added Sugar Issue Update

Following the last round of public consultations, The FDA announced that they had heard industry and consumer concerns regarding the added sugar rule requirement on the FDA's new Nutritional Facts Panel. The Commissioner of the FDA announced in August of 2018 that the FDA would be delivering revised guidance early in 2019 that may remove the added sugar line item requirement from some single-ingredient products such as maple syrup and honey. The IMSI is seeking a further extension to the compliance dates for the maple industry so that there is additional time for producer and public awareness, printing of new labels, etc.

The IMSI also continues to advocate for a permanent fix to the added sugar rules with the assistance of a lobbyist based in Washington, DC. A permanent fix would ensure that the FDA cannot re-open the added sugar debate at some point in the future.

The IMSI wishes to extend special thanks to all who expressed their views to the FDA regarding the added sugar requirement and to the state maple associations who assisted the lobbying effort to remove the added sugar requirement. Both Emma Marvin and Roger Brown from Vermont received special recognition from the IMSI for their leadership role in working with the IMSI to help resolve the issue.

Job Posting (Part time 16 to 24 hrs/week)

Executive Director, International Maple Syrup Institute

$15,000 to $30,000/yr (specific issue related work may increase remuneration)

The International Maple Syrup Institute (IMSI) was established in 1975 and is a non-profit organization representing maple industry stakeholders in both the United States and Canada. The Institute is focused on facilitating communication and collaboration amongst stakeholders, helping to ensure the purity and quality of pure maple products and working to maintain a regulatory environment and promotional strategies conducive to the continued growth and economic health of the industry. Members include maple producer associations, maple packers and packer cooperatives, maple equipment manufacturers and vendors, maple researchers and individual maple business enterprises.

The Executive Director is a part time position that reports to the IMSI Board of Directors and works with its Executive Committee in undertaking the responsibilities of the overall management and day to day operations of the organization. This position will assist with the development, implementation and evaluation of the IMSI's Work Program Plans and provide leadership for IMSI in accordance with plans and priorities approved by the IMSI's Board. The successful incumbent will be expected to operate from a home office with mandatory preparation for and attendance at four quarterly IMSI Board meetings and an Annual IMSI Membership meeting.

See full job description at www.internationalmaplesyrupinstitute.com

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Classified ads

For Sale: 3x8 oil fired Waterloo Small Bros. evaporator with pre-heater, 2 finishing pans, other accessories; two 500 gallon stainless steel bulk milk tanks, 200 gallon stainless steel bulk tank, filter press with 7 inch plates, and other maple equipment items. Phil Hanner, 812-995-3155 (Indiana).

Classified ads are free for *Maple Syrup Digest* subscribers (up to three lines)! Send your ads to editor@maplesyrupdigest.org.

Please Consider Including NAMSC in Your Estate Plan

The North American Maple Syrup Council has received a number of generous bequests from sugarmakers who wanted to ensure that the important work of our organization can carry on. Those funds helps us promote the maple industry and support our members. Planned giving like this is a way for you to show your support for the maple syrup industry for many years to come. It's a simple process.

You can give a dollar amount or a percentage or your estate, or you can list NAMSC as the beneficiary of your bank accounts, retirement plan or life insurance. Contact your attorney for information on how to revise your will, or your financial institution, plan administrator, or life insurance agent for the procedures required to revise your beneficiary designations.

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

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