Maple Syrup Digest

VOL. 25A, NO. 3 OCTOBER 2013

Maple Syrup Digest
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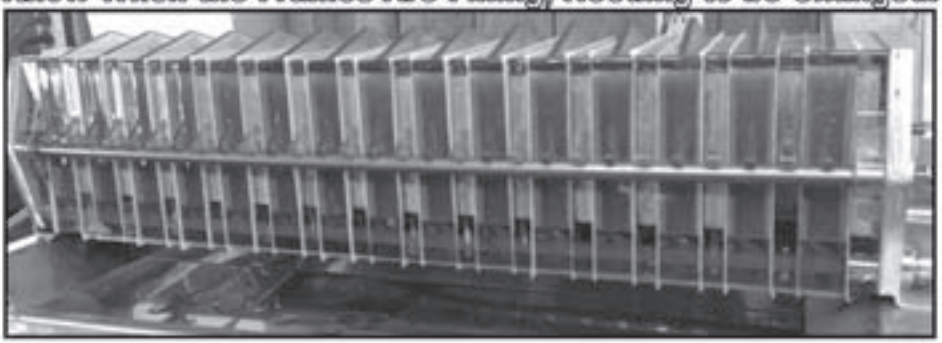

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MAPLE SYRUP DIGEST

Official publication of the

North American Maple Syrup Council www.northamericanmaple.org

Published and Edited by:

ROY S. HUTCHINSON • P.O. BOX 240, CANTERBURY, NH 03224

Phone: 603-783-4468 • Fax: 603-783-9953 • Email: mapledigest@tds.net

Published four times a year (Feb., June, Oct., Dec.)

Postage paid at: Canterbury, NH 03224

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COVER: Fradette's Maple Syrup, Hardwick, VT

GREETINGS FROM YOUR PRESIDENT

Hello to all of you,

Summer is drawing to an end and we're already preparing for the NAMSC meeting that will be held in New Brunswick in October. I hope to see many of you there.

I'm sure some will attend the meeting for the first time. These people will surely be very interested by the exchanges between the NAMSC and the IMSI. They will attend technical sessions on the evolution of our means of maple syrup production, as well as the countless opportunities that would arise if we work together.

We eagerly look forward to seeing you this October.

Until then.

Bonjour à vous tous,

L'été s'achève et déjà nous nous préparons à cette rencontre du NAMSC qui se tiendra au Nouveau-Brunswick en octobre. J'espère vous retrouver en grand nombre.

Je suis certaine que certaines personnes assisteront à cette rencontre pour la première fois. Elles seront certainement très intéressées par les échanges entre le NAMSC et l'IMSI. Elles assisteront aux sessions techniques qui les informeront de l'évolution de notre façon de faire en acériculture et des possibilités innombrables qui s'offrent à nous si nous travaillons ensemble.

Nous vous attendons en octobre.
J'ai hâte de vous revoir

À bientôt.

Cécile B. Pichette
Présidente
NAMSC

IMSI NEWS

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

Established in 1975, the International Maple Syrup Institute (IMSI) provides an open forum for the discussion of industry and government policies affecting the integrity, the quality and local and international markets for pure maple syrup. The IMSI also works to bring about greater uniformity in the customs and standards adopted by those engaged in the maple syrup industry. The membership is comprised of maple syrup producer associations, maple packers, equipment manufacturers, individual enterprises and others. The IMSI communicates and collaborates regularly with officials of the North American Maple Syrup Council (NAMSC) in pursuit of industry goals.

IMSI's Adulteration Testing Assistance Program

For many years, IMSI has facilitated the testing of syrup samples in the international marketplace that have been suspected as being adulterated. All IMSI members are strongly encouraged to take advantage of the IMSI's adulteration testing assistance if they suspect that syrup is adulterated anywhere in the world marketplace. In 2013, two samples of syrup obtained overseas, which were suspected of adulteration, were submitted to Centre Acer and the University of Waterloo in Ontario for adulteration testing. The results from this testing verified that the samples were not adulterated.

For further information regarding the IMSI's adulteration service, please contact the IMSI's Executive Director, Dave Chapeskie.

Misleading Labeling and Presentation of Syrup Products in the Marketplace

Over the past year, there has been considerable discussion regarding the issue of misrepresentation of maple and maple syrup in the marketplace both in North America and overseas involving products using the word "maple" or words "maple syrup" and the inappropriate use of visuals taken from the maple industry. These products contain none or very minimal amounts of pure maple syrup. In the summer of 2013,the IMSI Board of Directors has agreed that the IMSI needs to take action for countering this situation. A committee comprised of IMSI Directors, the IMSI's Executive Director was established to begin working on this file. The IMSI Board of Directors voted to support a number of initial actions at the Board of Directors meeting on August 20th in Orono, Maine.

1. The IMSI will be sending a letter to pre-selected food companies believed to be misrepresenting maple on their product label or otherwise through retail displays highlighting the issue and will be encouraging these companies to utilize pure maple syrup in their products; this letter will also be distributed to governments responsible for product labelling rules in the United States and Canada.

2. Dave Chapeskie and Matthew Gordon, Executive Director, Vermont Maple Sugar Makers Association

were asked to initiate work to map out existing legal statutes in Canada and the United States respectively, which are pertinent to the issue. Ongoing IMSI Input into Regulatory amendments would be tied to this.

3. The IMSI would explore programs related to food product authenticity such as Codex Alimenterius (CA) and the American Origin Products Association (AOPA) to assess their potential to help address the issue. The IMSI has joined the AOPA recently in order to become more familiar with that organization and to more fully assess its potential in helping assert product authenticity for pure maple products.

Other possible actions such as support for University Case Studies designed to help address identify solutions to the issue, possible engagement of the press and social media. Engagement of politicians may also be considered either by the IMSI or by IMSI members in collaboration with the IMSI.

Initiation of Dialogue Regarding Future Supply and Demand for Maple Syrup

While current markets for syrup are very good and generally prices are stable, concern was expressed regarding the ability of markets to absorb large production increases. At present, the burden of regulating supply and demand within the maple syrup industry rests with the Federation of Quebec Maple Producers through the quota system and strategic reserves within that province. The prevailing sentiment from the meeting was that governments should not subsidize capital investments in expanding maple syrup production facilities but rather focus investment assistance on market development both in North America and overseas. The distinctive nutritional merits of pure maple syrup combined with implementation of the Standard Definition, Grades & Nomenclature proposed by the IMSI should be fully capitalized on in marketing efforts. An IMSI working group was established to study this market supply and demand related issue.

Setting International Standards for Pure Maple Syrup

The IMSI has a very important role in the development of international standards for pure maple syrup. These standards will help position the industry for the further development and expansion of markets for pure maple syrup around the world. In the 1990s, the IMSI approved the development of equipment manufacturing standards to help ensure that contaminants would not enter syrup through new equipment installations and to encourage adoption of the new standards in all aspects of the maple syrup production and packing process. These standards have been a very important reference for both government regulators and industry representatives since they were developed and continue to serve as a very useful reference.

Since 2002, the IMSI has been involved in developing an international standard definition, grades and nomenclature for pure maple syrup. This project undertaking has been a very important priority of the institute for many years and has entered the

final stages, which should lead to implementation. Adoption of the proposed changes into government maple regulations and development and marketing of new colour classification equipment are required before the implementation can proceed. The IMSI is working continuously to help facilitate changes in the maple grades standard. It is anticipated that government agencies will allow for a transition period to help facilitate change to the new standard.

A chart summarizing progress towards incorporating the maple grades standard into federal and state /provincial maple regulations as well as a communiqué related to implementation of the new standard is included in this edition of the Maple Digest. This information will be updated for each edition of the Maple Digest until implementation of the standard grades is approved by the various government agencies.

Organic Certification

A committee of the IMSI chaired by Kathy Hopkins prepared and distributed a draft chart showing differences between organic certification standards at the federal level in Canada and the United States as well as among the different States, which have their own standards. There is still some work to do in finalizing the comparison chart and it is expected that a final version will be ready for the IMSI Board of Directors Meeting in Moncton, New Brunswick in October. Generally, IMSI Board representatives are satisfied with the current organic certification standards and their administration and voted not to pursue harmonization of the US and Canadian Standards at this time.

Nutritional and Health Benefits of Maple Syrup

Since 2010, the IMSI reviewed and consolidated information related to the nutritional and health benefits of pure maple syrup. The IMSI's nutritional and health benefits position statement, scientific papers, and the poster and rack card have been developed and published on a maple nutritional and health benefits CD. A poster and rack card were developed taking into account a review of educational and scientific information, input from Health Canada and the US Food and Drug Administration, as well as input from maple syrup industry stakeholders. This information is nutritional and potential health benefits information is posted on the IMSI website and is being utilized by some IMSI members as well as individual maple syrup producers in Canada and the United States. The IMSI will continue to monitor related scientific findings related to the nutritional and health values of pure maple syrup.

Development of a Position Paper for Invasive Exotic Insects

In recent years, the IMSI and NAMSC discussed and recognized the threats of invasive species to the maple syrup industry where detrimental species are allowed to establish in the hardwood (including maple) forests of Eastern North America. Governments in both the countries working with industry and community-based partners, have been successful in containment or eradication of Asian Long Horned

Beetle (ALHB) to-date. Success has not been as great for the Emerald Ash Borer (EAB), where it is now well established and fairly widespread in the eastern US and Canada and is moving quickly. It is anticipated that most larger or mature ash trees will be affected in the next decade unless natural or introduced parasites begin to contain and diminish this pest in the near future. The loss of ash species will have a detrimental effect on the ecosystems in most sugar maple forests. The IMSI has initiated the development of an industry Position Paper focused on the ALHB and EAB, which will outline industry expectations from government agencies, recommendations regarding collaborative arrangements and the role of the maple industry in helping address the issue. Once finalized, the Position Paper should also be a useful reference in helping deal with other invasive species.

Other IMSI Activities

The IMSI continues to provide an effective forum for ongoing communications among maple syrup producers, packers, equipment manufacturers and others. This includes quarterly Board of Directors meetings held in both Canada and the United States, which provide an excellent forum for communications and dialogue regarding issues of importance to the maple syrup industry. The IMSI regularly inputs into government policies, which have the potential to affect the maple syrup industry.

The IMSI continues to administer the Lynn Reynolds Memorial Leadership Award and the Golden Maple Leaf Award. The Lynn Reynolds Award recognizes the excellent service contributions of individuals to the North American and International maple syrup industry.

The IMSI continues to support the very successful Maple Grading School initiative.

The Executive Director of the IMSI and elected officials satisfy many requests for information and serve in an advisory role to its members and others on an ongoing basis. The Executive Committee members meet regularly to map out and discuss the IMSI's program agenda and help address ongoing and emerging issues.

“THAT’S NOT MY JOB”

From Wisconsin Maple News

This is a story about four people named Everybody, Somebody, Anybody and Nobody.

There was an important job to be done and Everybody was sure that Somebody would do it.

Anybody could have done it, but Nobody did it.

Somebody got angry about that, because it was Everybody’s job.

Everybody thought Anybody could do it, but Nobody realized that Everybody wouldn’t do it.

It ended up that Everybody blamed Somebody when Nobody did what Anybody could have!!

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SULFITE CONCENTRATION IN PURE MAPLE SYRUP

Mustapha Sadiki[a], Luc Lagacé[a] & Timothy D. Perkins[b]

INTRODUCTION

Sulfites are regulated food additives used as preservatives to maintain food color and prolong shelf-life, for the prevention of micro-organism growth, and for maintenance of the potency of certain medications (*Sapers, 1993; Taylor et al., 1986*). In many cases, sulfite concentrations are primarily related to food preservative use, however some food products may naturally contain low levels of sulfites (*Grotheer et al., 2008; Taylor et al, 1986*).

Consumption of food containing sulfiting agents may cause moderate to severe allergic-type reactions in some individuals. The overall prevalence of sulfite sensitivity in the general population is unknown and is probably low. Sulfite sensitivity is seen more frequently in asthmatic than in nonasthmatic people (*Knoldel, 1997*). Consequently, several food regulation agencies have adopted rules to control the use and concentration of sulfiting agents. Typically, the presence of sulfites in food at more than 10ppm should be declared on the food labelling (*Lecos, C.W. 1986; Health Canada - Food Labelling, 2010*).

Maple syrup is a natural product free of artificial coloring or other additives. Regardless, some publications mention that maple syrup may contain sulfites. These published data are based on theoretical estimates of similar products (sweeteners) or assumptions about the processing or product. To our knowledge, analytical tests of sulfites in maple syrup have never been conducted. In this study, which is conducted by Center ACER in collaboration with UVM Proctor Maple Research Center, direct measurements of sulfites concentration in maple syrup samples collected during 2011 and 2012 were made.

MAPLE SYRUP SAMPLING

The chemical composition of maple syrup may be related to several factors such as color or geographic production area. Several studies have clearly established a relationship between chemical composition of maple syrup and its color classes as well as the microbial activities found in sap. Also, in products other than maple, the natural occurrence of sulfites has been related in certain cases to microorganism activities or fermentation. Thus, to assess the natural occurrence of sulfites, the maple syrup color class and provenance were considered in the acquisition of maple syrup for testing.

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[b]UVM Proctor Maple Research Center, P.O. Box 233, Underhill Center, Vermont 05490

SULFITES TESTING

Maple syrup samples of different color classes were collected from different provenances (geographic production areas). A total of 59 maple syrup samples, 29 from Canada (Quebec, 20; Ontario, 7 & New Brunswick, 2) and 30 from USA (Vermont, 23; New York, 4 & Maine, 3) were tested. These samples cover all color classes from Extra-Light (Fancy) to Dark (Commercial). Figures 1 & 2 show the distribution of samples by color classes and provenance.

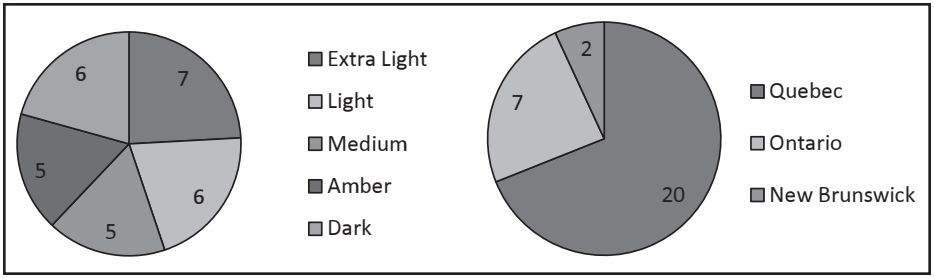

Figure 1. Provenance and Color Classes of Canadian Maple Syrup Samples (2011)

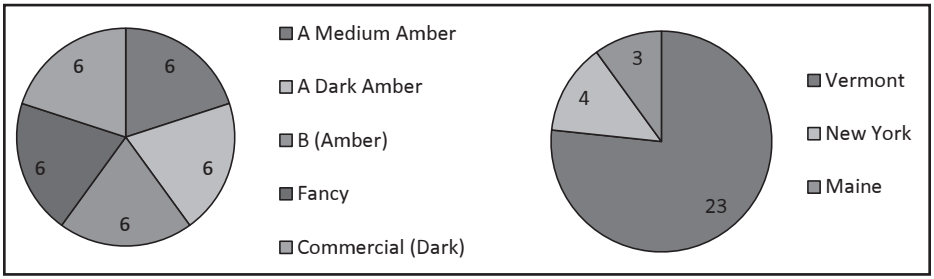

Figure 2. Provenance and Color Classes of United States Maple Syrup Samples (2012)

SULFITES ANALYSIS

Sulfites were tested according to the AOAC Official Method 990.28 (Optimized Monier-Williams Method), and the analyses were conducted by Maxxam Analytics (Mississauga, Ontario), an ISO 17025 accredited laboratory.

RESULTS

Sulfite concentrations observed in all maple syrup samples were below the detection limit (less than 10ppm). This level corresponds to the limit fixed by different regulation agencies for sulfites to be declared on the food labelling. The result of this investigation, which is observed on a set of 59 samples of different color classes and provenance, clearly shows that sulfites are not commonly found in pure maple syrup at levels of regulatory concern, although it cannot be ruled out that some processing methods may infrequently result in detectable levels.

ACKNOWLEDGEMENTS

This research was funded in part by the International Maple Syrup Institute. The authors would like to thank the Ontario Maple Syrup Producers Association, New Brunswick Maple Syrup Association, and Butternut Mountain Farm (Vermont) for providing maple syrup samples.

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AN INTEGRATED APPROACH TO PRODUCING SYRUP FROM MAPLE, BIRCH, AND WALNUT TREES

By Michael Farrell
Pub Date: November 1, 2013

The Sugarmaker's Companion is the comprehensive guide small- and large-scale syrup producers have been waiting for in their quest to create a profitable business model. Michael Farrell documents the untapped potential of American forests and shows how sugaring can turn a substantial profit for farmers while providing tremendous enjoyment and satisfaction. Farrell, sugarmaker and director of the Uihlein Forest at Cornell University, incorporates the wisdom of traditional sugarmaking with the value of modern technology (such as reverse-osmosis machines and vacuum tubing). His balanced view of the industry offers a realistic picture of how modern technology can be beneficial—economically and environmentally.

The first book of its kind, The Sugarmaker's Companion includes:

• A focus on maple syrup as a healthy, local, sustainably produced alternative to corn syrup and other highly processed artificial sweeteners;

• Discussions about organic certification, sugarhouse registration, and the new international grading system;

• Information on marketing to create a profitable business model based on scale, interest, access, and more;

• Detailed analysis of the economics of buying and selling sap;

• Information on ways to process and market other tree saps, including birch and walnut;

• Ways to enhance diversity in the sugarbush and interplant understory crops for value-added products such as ginseng, goldenseal, and mushrooms; and,

• An economic analysis of utilizing maple trees for syrup or sawtimber production.

In addition, readers and sugarmakers will learn plenty of practical, how-to skills, such as:

• If, and on what scale, syrup production is right for them;

• How to find trees for tapping;

• The essentials of sap collection;

• The art and science of sugarmaking;

• How to build community through syrup production; and,

• Valuable information on ecological forest management and value-added products.

Appealing to foresters, organic farmers with woodlands, homesteaders, preppers, permaculture enthusiasts, and, of course, sugarmakers, this book is applicable to a wide range of climates and regions, and is sure to change the conversation around syrup production and prove invaluable for both home-scale and commercial sugarmakers alike. This is a unique guide to making an integrated sugaring operation, interconnected to the whole-farm system, woodland, and community.

LAKE ERIE MAPLE EXPO

By Les Ober

If you missed the LEME last November you missed one of the most exciting maple events to come along in years. Planning for the 2013 edition, in November, is underway. LEME Chairman Daryl Sheets reports that we have confirmed some new speakers for 2013. They include Dr Timothy Perkins from University of Vermont Proctor Lab, Steve Childs from Cornell University and Dr. Gary Graham from The Ohio State University. The LEME will once again be held in Albion, Pennsylvania on Friday and Saturday November 8, & 9, 2013 at the Northwestern High School. Albion is about 15 miles South of Erie on St Rt. 18 and 6N.

New this year, will be three Maple Syrup Production Workshops, 10 - 2 Friday. With the LEME being held in early November this allows for an expansion of the programing format. It also allows for outside workshops that would not be possible in winter months. Planned this year are workshops on Managing Vacuum Tubing Systems, Tubing System Installation and a special workshop just for beginners. The vacuum seminar will be held at Gary & Shirley Bilek's, Triple Creek Maple north of Albion. The program presenters will be Steve Childs from Cornell University and Les Ober from The Ohio State University. The program will cover the use of vacuum in tubing systems from installation to operation. At the Albion High School, Karl Evans from May Hill Maple LLC and Glen Goodrich from Goodrich Maple will help guide producers through the process of installing a tubing system. Laura Dengler will conduct a workshop for backyard producers. This event will also be held at Gary & Shirley Bilek's. The registration for the events will be separate and the attendance will be limited and on a first come basis. More information on the workshops will be available soon.

So what can producers expect when they arrive at the LEME? The LEME will kick off Friday evening with a 4 hour tradeshow from 5:00 to 9:00 pm. Rounding out the program on Friday evening will be a Maple Rap Session where producers will have a chance to ask questions and get answers from a group of experts. On Saturday, the program will run from 8:00 am to 4:00 pm with a break for lunch which is included in the registration fee. There will be breakout sessions that will cover a variety of topics. Presenting the topics will be speakers from the Maple Industry, University of Vermont, Penn State University, Cornell University and The Ohio State University. There will also be producers from Pennsylvania, New York and Ohio presenting and working behind the scenes to make the expo a success.

The facility at Northwestern High School has over 5,000 sq. ft. available for the tradeshow with additional rooms if needed. There is a 600 seat auditorium and multiple classrooms available for speakers. Most are equipped with modern audio visual equipment. The LEME Committee has enlisted the help of the Albion FFA Chapter to help put on the Expo.

Information will be posted on the Northwest Pennsylvania Maple Syrup Producers Association and Ohio Maple Producers Association websites:

www.pamaple.org,

www.ohiomaple.org

and the Ohio Maple Blog at:

http://www.ohiomaple.wordpress.com

There will be a complete list of speakers, topics and times released by September 1st. Registration deadline is set for October 15, 2013 and preregistration is required. If you want to make a weekend out of your visit, the Erie PA area is one of Pennsylvania premier vacation areas with something for all members of the family. In addition, fall is a wonderful time to visit NE Ohio and Western NY home of some of the best wineries and most interesting natural and historical sites in the nation. Mark your calendar and get ready to attend one of the premier maple trade show and educational seminars in North America.

STATES	**Vermont**	requested by the Governor and Secretary of Agriculture to show legislative support for the changes. Henry Marckres has been tasked with writing the new grades rules. Rules adopted under this process have the force and effect of law. The IMSI has shared the draft USDA Regulatory Proposal with Henry Marckres. It is projected that Vermont's new grading regulations will be in place for the 2014 maple season. The IMSI has shared the draft amended USDA Maple Regulations, received July 23rd, 2013, with maple regulatory officials in Vermont.
	Maine	A new Bill passed in the Maine Legislature replaces the existing maple syrup grading system for the State with a new grading system that has been proposed by the International Maple Syrup Institute. It proposes a uniform grade of maple syrup: Grade A for maple syrup sold at retail. The bill takes effect only upon adoption of the new grading system by the United States Department of Agriculture and the Canadian federal government and notice of those actions being provided by the Commissioner of Agriculture, Conservation and Forestry to the Secretary of State, the Secretary of the Senate, the Clerk of the House of Representatives and the Revisor of Statutes. The IMSI has shared the draft amended USDA Maple Grades Regulations, received July 23rd, 2013, with Regulatory officials in New York State.
	New York	New York State government officials have been actively working on draft Maple Grades Regulations, incorporating the IMSI's Maple Grades proposal. Public hearings on the IMSI Grades proposal were held in 2013 with strong support being the outcome from this exposure . In August 2013,the IMSI Executive Director was informed that the maple syrup grade changes proposed by the IMSI will be required in law in New York State on January 1st,2015.The IMSI has shared the draft amended USDA Maple Regulations, received on July 23rd, 2013, with Regulatory officials in New York State.
	Ohio	Ohio has been awaiting preparation of the draft Amended USDA Maple Grades Regulations. The IMSI has shared the USDA draft amended Maple Grades Regulations which were received on July 23rd, 2013 with maple regulatory officials in Ohio.
	New Hampshire	New Hampshire Regulatory officials have been awaiting receipt of the USDA Draft Regulations before proceeding through their Regulatory process. The USDA Draft Regulations has now been provided to industry officials in New Hampshire. Legislative approval may not be required as part of the approvals process in New Hampshire. The IMSI will be sharing the USDA draft amended regulations, which were received on July 23rd, 2013, with Maple Regulatory officials in New Hampshire.

Status of Progress in Incorporating the IMSI Standard Grades Proposal into Federal and State/Provincial Maple Grades Regulations in the United States and Canada

Status Report #1 – July 2013

JURISDICTION		STATUS – IMSI STANDARD GRADES PROPOSAL
CANADA		The CFIA commenced work on the standard grades file following the unanimous passage of a motion in the Canadian Senate, recommending the adoption of the IMSI Standard Grades Proposal. Following a round of public consultation, the CFIA is now actively involved in preparing draft regulations. These are expected to be published for comment in the late summer/fall of 2013 (Gazette 1), followed by a final publication projected (Gazette 2) and adoption of the new rules projected by CFIA for the 2014 maple production season. The IMSI is closely monitoring progress by CFIA.
PROVINCES	Ontario	OMAF and MRA staff continue to monitor the amended Canadian Federal Regulation and await Gazette 1 publication of the amendments in the fall of 2013. When the CFIA publishes the regulatory amendments, staff will review the amended federal regulations . IMSI and OMSPA officials are currently in discussion with Ministry officials in Ontario in an attempt to clarify follow-up and extent of approvals process.
	Quebec	MAPAQ officials are currently discussing the IMSI proposal and are awaiting the decision of the Canadian Federal government. IMSI member representatives have initiated contact with MAPAQ officials and will continue to monitor activities.
UNITED STATES		The USDA prepared a first draft of revised Maple Grades Regulations in 2012, seeking comment. IMSI reviewed this draft and provided comments to USDA. USDA provided the IMSI with a second draft of the revised regulations (July 23, 2013) and provided a two week window for comment. The IMSI is actively seeking further clarification on timelines associated with the remainder of the USDA Regulatory approvals process. The IMSI is closely monitoring progress by USDA.
		A joint resolution supporting the grade changes was passed by both the Senate and House in 2013. This was

INFORMATION RELEASE FROM THE INTERNATIONAL MAPLE SYRUP INSTITUTE (IMSI)

Update Regarding Implementation of Standardized Maple Grading and Nomenclature in North America

In August 2013, the IMSI prepared a summary chart showing the status related to the movement of the IMSI's Proposal for an International Maple Grading and Nomenclature system through government regulatory approval processes at both the Federal and State/Provincial levels in Canada and the United States (refer to pages 20 and 21 of this edition of the Maple Digest). The intention of the IMSI is to update this chart and distribute it to IMSI members and NAMSC members as well as other maple industry stakeholders on a quarterly basis until the various government approvals for implementation of the new grading standard are obtained in the United States and Canada.

In recent months, a number of IMSI members and others have been asking when the new standardized grading system will come into effect. A related question is regarding when they should be ordering new product labels to accommodate the change. Neither regulatory authorities nor the IMSI are able to say with any absolute certainty when the new grading system will be approved in maple regulations. The Canadian Food Inspection Agency (CFIA) and the Vermont Agency of Agriculture Food and Markets have indicated that their plan is to have the changes take effect for the 2014 production season and recent decisions in New York State indicated that the changes come into effect there January 1st, 2015. It is expected that the United States Department of Agriculture (USDA) and other states and provinces will most likely have the grade changes accommodated in regulation and approved for the 2015 maple production season. Most government departments are expected to allow some time to transition into the new grading system. Consequently, maple producers and packers who have old labels to use up or prefer to wait until the end of any approved transition period are expected to have that option. Other maple producers and packers may opt to adopt the new grading system as soon as regulatory approvals affecting their jurisdiction are obtained.

It is also important to remember that manufacturers of the new colour classification kits are somewhat reluctant to invest in production of new colour classification kits until government regulatory approvals are in place or are imminent. Most current manufacturers of temporary grading kits have indicated an interest in making the new kits. Production and distribution of the temporary kits is not expected to take very long. Production of the new Lovibond colour wheel may take a little longer but a prototype for the new wheel has already been developed. The IMSI will keep parties interested in producing the new colour classification equipment informed regarding the status of regulatory approvals.

The IMSI continues to encourage federal, state and provincial governments to expedite the regulatory approvals process so that the change can be as synchronized as possible across all of the jurisdictions. Quarterly updates will be posted on the IMSI's website and published in the Maple Digest. Maple Producer Associations, maple packers and other maple industry stakeholders are asked to help extend the reach of these communications.

Prepared by:
Dave Chapeskie, R.P.F.,
Executive Director,
International Maple Syrup Institute
Sept 2nd 2013

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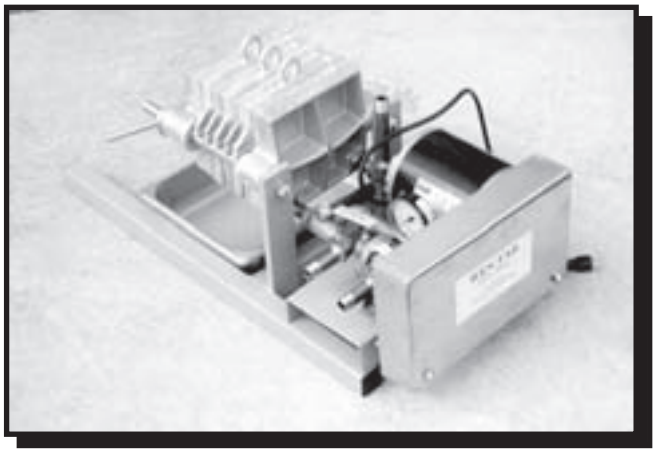

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THE "JONES RULE OF 86" REVISITED

Timothy Perkins and Mark Isselhardt
University of Vermont Proctor Maple Research Center
P.O. Box 233, Underhill Ctr., VT 05490
Underhill Ctr., VT 05490

The Jones "Rule of 86" was devised in 1946 by C.H. Jones, a scientist and educator at the University of Vermont. Originally it was incorporated into a poem that taught several best management practices in a humorous way (see "The maple rule of eighty-six", reprinted on pages 18-19 of the December 1967 edition of the "National Maple Digest" and pages 129-132 of Maple Sugarin' in Vermont, by Betty Ann Lockard 2008). The gist of the rule is that if one divides 86 by the sugar content of sap, you can estimate the amount of sap required to produce a gallon of syrup. Thus:

$$S = 86/X \quad \text{and} \quad W = S - 1$$

Where: S = the initial volume of sap (or concentrate) required to produce 1 gallon of syrup
X = the starting sap (or concentrate) sugar concentration in °Brix.
W = the amount of water to be boiled off to produce 1 gallon of syrup

(Nomenclature from the North American Maple Producers Manual, Second Edition, 2006)

Thus it is easily seen that an average sap sugar concentration of 2°Brix would require 43 gallons of sap to produce 1 gallon of syrup, or a sap:syrup ratio of close to 40:1.

At the time it was devised, the rule was intended to serve as a simple way to calculate (pocket calculators and Smart Phones hadn't been invented yet) and easy to remember tool for maple producers to estimate the number of gallons of sap required to make a gallon of syrup at a given sap sugar content. One must also realize that the standard legal syrup density at the time was 65.5°Brix, and that given the existing technology, this guideline was only used in a fairly low and narrow range of sap sugar concentration.

Fast forward to the present day when concentration by reverse osmosis is common, and the value and difference in sap (or concentrate) sugar content can be fairly high, and sap and syrup prices are relatively high, and we should therefore not be surprised to find that the old "rule" doesn't seem to hold up any longer. Those who spend a little time thinking about this (and those who often buy or sell concentrate) realize that if you use the Rule of 86 on highly concentrated sap, things just fall apart. An extreme example helps illustrate this point quickly and clearly.

As on the previous page, the "Rule of 86" states:

$$S = 86/X$$

If we assume a sap sugar concentration equal to syrup density in 1946 of 65.5°Brix, we end up with:

$$S = 86/65.5 = 1.31$$

Meaning that using the "Rule of 86", it would take 1.31 gallons of sap at 65.5°Brix to make 1 gallon of syrup at 65.5°Brix! What's going on? That answer just doesn't make any sense.

For starters, one of the reasons the "rule" doesn't always work well is that the standards for density of maple syrup have changed since 1946. For many places, minimum syrup density is 66.0°Brix. In some states, the minimum density of syrup is 66.9°Brix. Surprisingly, even these small apparent differences at the syrup level can have large effects on the amount of sap required at a given sap sugar content.

Secondly, the "Rule of 86" was never meant to calculate the precise amount of sap needed. It'll get you in the ballpark, which for the sugar concentrations of raw sap it was originally used for, turned out to be good enough.

Finally, the original calculations actually produced a "Rule of 86.26", but given the intended usage and range of sap sugar concentration at the time, rounding to 86 seemed close enough.

Given our increasingly powerful Reverse Osmosis machines, the resultant high concentrate sugar levels attainable today (up to 40°Brix!), as well as the vast quantities of sap and concentrate being sold in the industry, along with the current high price of syrup, a more precise quantification tool is necessary in many cases.

Without delving too deeply into the chemistry of sugar solutions or the math, a much closer approximation of the amount of sap (or concentrate) needed to produce one gallon of syrup at 66.0°Brix can be obtained using a slight alteration to the "rule."

$$S = 87.1/X-0.32 \quad \text{and} \quad W = S-1$$

Note: *Keep in mind the proper mathematical order of operations (divide first, then subtract).*

For syrup at a density 66.9°Brix, the formula needs to be slightly adjusted again.

$$S = 88.2/X-0.32 \quad \text{and} \quad W = S-1$$

Both of these formulas are still approximations, but are relatively easy to

calculate and get us much closer to the current true value than the original "Jones Rule of 86."

Some examples are given in the Table below. Values are provided in S (volume of sap required to produce one gallon of syrup) in gallons of sap at a given Brix value.

	Original Jones Rule of 86 for 65.5°Brix Syrup	**New Jones Rule of 87.1 for 66.0°Brix Syrup**	**New Jones Rule of 88.2 for 66.9°Brix Syrup**
°Brix	S (gal)	S (gal)	S (gal)
2.0	43.00	43.23	43.78
4.0	21.50	21.46	21.73
8.0	10.75	10.57	10.71
10.0	8.60	8.39	8.50
20.0	4.30	4.04	4.09
40.0	2.15	1.86	1.89
60.0	1.43	1.13	1.15
65.5	**1.31**	1.01	1.03
66.0	1.30	**1.00**	1.02
66.9	1.29	0.98	**1.00**

So why does this matter? As an example; if a sugarmaker has 100 gallons of 2% sap, based on the original Jones Rule, that sugarmaker would calculate they should be able to make 2.33 gallons of syrup. However, the original Jones Rule tends to overestimate when it comes to sap. According to the updated Jones rule, for a state with 66.9°Brix as a minimum, the sugarmaker can expect to produce 2.28 gallons of syrup. The 0.05 gallons of syrup difference, while seemingly small, represents about a 2.1% decrease when calculating syrup production, which may be quite significant to the bottom-line when large quantities of sap are involved. The relationship changes for higher sap sugar concentrations - the original Rule underestimates production of syrup for concentrate. Buyers and sellers of sap and concentrate may wish to adjust accordingly.

Of course, all of this also presumes that the observed measurements of sap, concentrate, and syrup sugar content are both accurate and precise. That however, is another lesson for next time.

THE AMERICAN MAPLE MUSEUM

Croghan, New York

The Board of Directors is very dedicated to the preservation of the museum and what it stands for. We are proud of the maple industry that has been so prevalent in many of our lives. We want a facility that our young people can tour to learn about the maple syrup making process beginning with the Indians to present day activities. We want an institution that adults can tour to revive memories and to understand how hard people have worked to produce the maple syrup we all enjoy. We are determined that the history of the maple syrup industry is preserved.

Since the opening of the American Maple Museum in 1977, the museum has been able to operate on funds from donors, social events, contributions and fund raising activities. The museum continues these but also has moved forward with a sustainability campaign in 2012. This campaign has been successful and continues to be. We are always looking for cooperate and individual sponsors and would like to take this opportunity to welcome new patrons to this campaign drive.

Additioinal information can be found at: www.americanmaplemuseum.org

Donald M. Moser, President, American Maple Museum

MAPLE SYRUP DIGEST INDEX

(Continued from the February 1999 issue)

The purpose of this index is to inform our readers of articles published since the beginning of the Digest. If you see see an article you would be interested in and don't have that Digest we will send you the issue at a cost of $1.00 per issue.

FEB. 1999
Impacts of the January 1998 Ice Storm and Looking Ahead (Koegl)
A Year After The Ice Storm - What Next for New Hampshire Producers? (L. Blais)
The Affect of Soil Calcium to Aluminum Ratio on Sugar Maple Seedlings (Demchik, Sharpe)
What Every Sugarmaker Should Know about the Asian Longhorned Beetle (Parker, Skinner)
Research at the College d'Alfred Looks at Solutions for Maple Tubing Contamination (P-A. Blais, Page)

JUNE 1999
The American Maple Museum (E. Allen)
Last "First Tapping" Hosted by Longtime Syrup Producers (Schultz)
Lead in Sugar Maple Sap from one Northern Pennsylvania Site (Demchik, Sharpe, Kogelmann)

OCT. 1999
New York State Tour a Leaning Experience (Crill, Lyndaker)
Wood Firing of Maple Sugar Evaporators (DeBoer)
The Asian Longhorned Beetle - Beware (Skinner, Parker)
Sugarhouse on The Mall in Washington, DC (Hutchinson)

DEC. 1999
We Care About YOUR Trees - Update on the Asian Longhorned Beetle (Parker, Skinner)
Uihlein Sugar Maple Ginseng Research Project (Beyfuss, Staats)
Investigating Manganese Toxicity on Sugar Maple Seedlings in Solution Culture (Kogelmann, Sharpe)
1999 NAMSC Convention - Portland, Maine (Vogt)

FEB. 2000
Remembering "Doc" Willits (Davenport)
Environmental Stresses on the Sugar Maple by the Year 2000 May Affect Sap Biochemistry, Hence Syrup Grades (Morselli)
Greenhouse Effects - Global Warming is Well Underway - Here are Some Telltale Signs (Time Magazine)
The American Maple Museum (Allen)

JUNE 2000
Update on the Maple Tubing Sanitation Research in Ontario (Blais)

The American Maple Museum (Allen)
The Pennsylvania Maple Syrup Industry (Demchik, Finley, Davenport, Adams)

OCT. 2000

Why We Need Local Farms (Lewis)
The American Maple Museum (Allen)
A Survey of Sugar Maple Nutrition in Vermont and its Implications for the Fertilization of Sugar Maple Stands (Wilmot)

DEC. 2000

Sanitation of Maple Tubing Systems: Second Year of Testing (Blais, Weil)
2000 NAMSC Convention - Burlington, Vermont (Vogt)
Monitoring Ice Storm Recovery of Sugar Bushes in Northern New York (Staats, Smallidge, Krasny, Campbell, Winship)

FEB. 2001

Sugar Maple Tree Improvement Program (Uihlein Sugar Maple Field Station, Department of Natural Resources, Cornell University)
Sugar Maple Management Highlights for the Region (from the North American Maple Project)

JUNE 2001
New Acoustic Detector Helps Locate Asian Longhorned Beetles (Reprinted from Timber Producer Association of Michigan & Wisconsin Magazine)
The American Maple Museum (Allen)
Equating Syrup Price to Sap Price (Jenkins)

OCT. 2001
Cornell University Continues Ice Storm Recovery Program to Monitor Sugar Maple Health & Productivity (Campbell, Winship, Staats)
Comparing Some Key Attributes of Sugar Maple and Black Maple (Chapeskie)
The American Maple Museum (Allen)
Limitations in the Use of Ozone to Disinfect Maple Sap (Labbe, Kinsley, Wu)

DEC. 2001
2001 NAMSC Convention - St. Cloud, Minnesota (Vogt)
What's New in your Sugarbush? (Hopkins)

FEB. 2002
Testing for Invert Sugar in Maple Syrup (Dole)
High Pressure Boiler Selection for the Production of Maple Products (Coons)
Sugar Maple/Ginseng Research Projects (Uihlein Sugar Maple Field Station)

JUNE 2002
The American Maple Museum (Allen)

OCT. 2002
Comparison of Alternative Sap Ladders Applied Research in Ontario (Chapeskie, Wheeler)

DEC. 2002
2002 Census of Agriculture Begins to Count the Nation's Farms (New England Agriculture Statistics Service)
2002 NAMSC Convention - North Conway, New Hampshire

FEB. 2003
OSHA Inspections - The Maine Experience (Hopkins)

JUNE 2003
Two Pipe Sap Ladder - A Promising Alternative (Chapeskie)
Blending Syrup - Part I (Heiligmann)
Excess Manganese Reduces Chlorophyll in Sugar Maple Leaves (St. Clair, Sharpe, Lynch)

OCT. 2003
Blending Syrup - Part II (Heiligmann)
Managing a Small Lead-Soldered Evaporator to Keep Lead Out of Syrup (Wilmot, Isselardt, Perkins)
Field Evaluation of the Small Diameter Spout for Maple Sap Collection (Staats, Campbell)

DEC. 2003 2003 NAMSC Convention - Truro, Nova Scotia (Kless)
1998 Ice Storm Effects on the Health and Productivity of Sugar Bushes of Eastern Ontario (Noland)

FEB. 2004 A History of Taps and Tree Size (Chabot)
Cultural Methods for Establishing Sugar Maple in Field Plantings (Staats, Campbell)

JUNE 2004 Improving Evaporator Efficiency (Fruth)
Weather Forecasts for Maple Producers (Eggleston)
Shelf Life Extension of Maple Cream (Padilla-Zakour, Worobo, Tandon, Churey, Winship, Merle)

OCT. 2004 Sugar Maple Health and Management (Ruble)
Fertilization of Sugarbushes - Part I - Physiological Effects (Perkins, Wilmot, Zando)

DEC. 2004 Fertilization of Sugarbushes - Part II - Sap Volume and Sweetness (Perkins, Wilmot, Zando)
2004 NAMSC Convention - Lake George, New York (Polak)

FEB. 2005 1988 Ice Storm Effects on the Health and Productivity of Sugar Bushes of Eastern Ontario: Part 2 (Noland, McVey, Chapeskie)
Some Background on the Asian Longhorned Beetle
Evaluation of Alternative Sap Ladders Summary of 2002-2003 Research Project (Chapeskie)

JUNE 2005 Maple Grading School A Sweet Success (Graham)

OCT. 2005 Maple Syrup Production Down 18 Percent Nationwide (NASS)
New Tapping Guidelines (Chabot)
A History of the Gooseneck: The Brower Sap Piping System and the Cary Maple Sugar Company (Thomas)

DEC. 2005 Making Maple Syrup in a Land of Funnel Cakes and Pulled Pork (Rechlin, Michielen)
2005 NAMSC Convention - Trois-Rivieres, Quebec (Polak)

FEB. 2006 Proctor Maple Research Center Update: Investigation of the Effects of Sap Processing Equipment and Techniques on Maple Syrup Chemistry & Quality (Perkins)
Controlling Microbial Population in Sap Systems (Worobo, Chabot)
Climate Change and the New England Forest (Massachusetts Audubon Society, Sanctuary Magazine, Spring 2005)

JUNE 2006	Temperatures in the Sugarbush (Wilmot) Relating Spectrophotometer Readings to Visual Grading of Maple Syrup (Chabot, Childs)
OCT. 2006	Should Lateral Lines be Vented? (Perkins, Wilmot) Does Sap Flow Better During Holy Week? (Saupe)
DEC. 2006	Sugar Profiles of Maple Syrup Grades (van den Berg, Perkins, Isselhardt) 2006 NAMSC Convention - Green Bay, Wisconsin (Polak)
FEB. 2007	Comparison of Visual Grading Methods (Chabot, Childs) Sweet New Role for Mothballed Agroforestry Center (VanDusen)
JUNE 2007	Survey of Important Issues Facing the Maple Industry (Hopkins, Dole, Marckres) Comparison of the “Small” Spout with the Traditional 7/16” Spout (Perkins, Stowe, van den Berg)
OCT. 2007	Lecanium Scale: What a Sticky Mess! (Rogers, Skinner, Parker) Temperature Patterns within an Oil-Fired Maple Evaporator (Isselhardt, van den Berg, Perkins) Vacuum Sap Collection: How High or Low Should You Go? (Wilmot, Perkins, van den Berg)
DEC. 2007	2007 NAMSC Convention - Akron, Ohio (Polak)
FEB. 2008	Effects of Various Filters on Sap Quality and Characteristics (Lachance, Crolla, Lagace, Chapaskie)
JUNE 2008	The Timing of Tapping for Maple Sap Collection (Wilmot)
OCT. 2008	Vapour Compression Evaporation (Rogers) Storing Your Bumper Crop (Ober) Can Maple Sugar Producers Succeed without Research (Chabot, Perkins, Ramacieri) FSC Certified Maple Syrup Becomes Available in Ontario (Davis) Asian Long-Horned Beetle Discovered in Massachusetts (McCrumm)
DEC. 2008	2008 NAMSC Convention - Amherst, Massachusetts (Polak)

FEB. 2009 Metabolism Off-Flavor in Maple Syrup - Part I: Identification of the compound responsible for metabolism off-flavor (van den Berg, Perkins, Godshall, Lloyd, Isselhardt)
Achieving the Right Syrup Density (Henderson)
Ice Storm Unveils Discovery of Another Tree with Signs of ALB (McCrumm)

JUNE 2009 Technical Position Paper on Air Injection (Martin, Perkins, Ramacieri, van den Berg)
Industry Reviews Air Injection Technology and its Use in the Production of Maple Syrup (Chapeskie)

OCT. 2009 Metabolism Off-Flavor in Maple Syrup - Part II: Remediation of metabolism off-flavor in maple syrup (van den Berg, Perkins, Isselhardt, Godshall, Lloyd)
Development and Testing of the Check-Valve Spout Adapter (Perkins)

DEC. 2009 2009 NAMSC Convention - Bar Harbor, Maine (Polak)

FEB. 2010 Antimicrobial Silver in Maple Sap Collection (Perkins)

JUNE 2010 Boiling Clean with Air (Wheeler)
An Alternative Measure of Yearly Maple Syrup Production (Yield-Per-Tap/Day) (Tyminski)
An Overview of Consumer Research Conducted to Determine Support for a Standardised Grading System for Pure Maple Syrup (Garwood)

OCT. 2010 Excerpts of Postings about Leader Check-Valve Adapters (Perkins)
Pure Maple Syrup Contains Medicinally Beneficial Compounds (ScienceDaily)
Changes in Sap Yields from Tubing Systems under Vacuum Due to System Aging (Perkins, Stowe, Wilmot)
Maple Syrup Production Down 19 Percent Nationwide (NASE)

DEC. 2010 2010 NAMSC Convention - Stratford, Ontario (Polak)

FEB. 2011 2010 Sugaring Season Survey (Perkins)

JUNE 2011 Estimating Twig Starch Content in Sugar Maple: Evaluation of the Visual Technique (Isselhardt)
Identification of Microbial Spoilage in Maple Syrup Samples (Clader, Hopkins, Marshall, Annis)

OCT. 2011	Maple Syrup Production in a Changing Environment (Hluchyj, Murphy) History: North American Maple Syrup Council
DEC. 2011	2011 NAMSC Convention - Frankenmuth, Michigan (Polak)
FEB. 2012	Relationships between Tubing System Component Age and Sap Yield - A Preliminary Assessment (Perkins, van den Berg) 2011 Update of Maple Tubing and Taphole Sanitation Research at Cornell (Childs) A New Method for Pricing Sap (Farrell)
JUNE 2012	High Vacuum in Gravity Tubing (Wilmot)
OCT. 2012	Tubing Cleaning - Methods Used in the United States (Perkins, van den Berg)
DEC. 2012	2012 NAMSC Convention - Mystic, Connecticut (Polak) Chemical Composition of Scale in Maple Syrup Evaporators (Illelhardt, van den Berg, Perkins)

NAMSC/IMSI NEW BRUNSWICK TOUR SCHEDULED

The annual meeting for the NAMSC/IMSI is set for October 23rd thru October 25th with an optioal tour of Hopewell Rocks and the Bay of Funday on Saturday, October 26th.

This is the first time that a 3 day event is tried out. We will have an optional tour on day 4 for those that would wish to stay over.

There with be special events, like the Taste of New Brunswick, a very interesting Acadian Coastal tour as a companion tour and entertainment along with meetings, technical sessions and the Awards banquet on Friday, October 25th.

Full registration packages will be sent out on July 1st. If anyone wants to make their hotel reservations now at the Delta-Beausejour in Moncton, here is the information:

Toll free: 1-888-351-7666

Special rate for NAMSC-2013-conference: $130.00 + tax, parking included

To book by e-mail: https://www.deltahotels.com/Groups/Delta-Beausejour-Groups/NAMSC-2013-Conference-Maple-Syrup

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COMING EVENTS

NAMSC/IMSI ANNUAL MEETING
October 23-25, 2013
Delta, Beauséjour, Moncton, N.B.
For further information, contact Yvon Poitras at yrp@nb.aibn.com

LAKE ERIE MAPLE EXPO (LEME)
November 8-9, 2013
Northwestern High School, Albion, PA
For further information: www.pamaple.org

IN MEMORIUM

CHRISTOPHER RUSSO

Christopher Russo, 72, formerly of Huntington Road, passed peacefully at the Fisher House in Amherst on July 16, 3013.

He was born in Deerfield, July 15, 1941 and was the son of the late Columbus and Mildred Russo.

Chris graduated from Deerfield Academy in 1959 and Northampton Commercial College in 1961. After college, he worked for the Millers Falls Company.

He married his wife Cynthia in 1965 and they moved to the Boston area where he took a position with Honeywell.

They returned to western Massachusetts in 1973 and joined his father and brother in business, starting P & M Wood Products in Northampton until he joined Hillside Plastics in 1994, where he worked through to his retirement in 1913.

He loved spending time with family, gardening, taking trips, music, crossword puzzles, the New England Patriots and was an avid card and tennis player.

Chris is survived by his loving wife of 40 years; daughter, Kimberly and her husband, Douglas Staut and their daughter, Hailey of New York City; Son, James and his partner Elizabeth Tartleton of Long Island, New York.

The youngest of four boys, Chris is survived by brothers, Victor of Deerfield and David to Toronto, and was predeceased by his brother Allan.

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