Maple Syrup Digest

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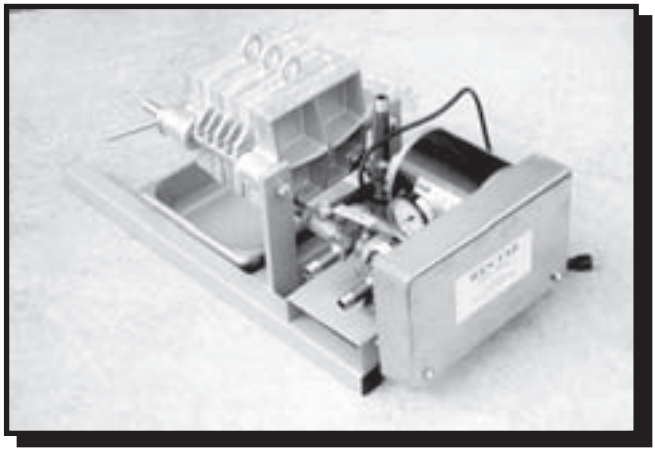

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COVER: Dave Chapeski and Michael Girard

GREETINGS FROM YOUR PRESIDENT

It's great to get back in touch again.

I think you'll have to agree that we've just been through one of the most peculiar sugaring off seasons in a long time.

Everyone know that, in order to have a great season, we need cold nights and not-too-warm days so the sap flows in the trees and we can collect it in abundance.

Of course, this year Mother Nature had the last laugh. In Quebec, in our southernmost areas, we had almost 14 frost-free days with spring temperatures rarely seen for that time of year. No matter, the sap continued to flow. In my own region of Lanaudière, we boiled our first sap on March 11 and by April 1 it was all over. I must say, though, the syrup is quite tasty.

This year, Quebec's coldest producing areas had a good season and we understand why. The hot weather we had in March did not have as great an effect as it did in the warmer areas. When it came to our production, Mother Nature once again showed her unpredictable side.

That said, I hope just the same that in every one of the provinces and states the season turns out to be a lucrative one for you all.

C'est avec un grand plaisir que je vous retrouve.

Vous serez sûrement d'accord avec moi pour dire que nous venons de vivre en 2012 une drôle de saison des sucres.

On a toujours entendu dire que pour avoir un bon printemps, les nuits doivent être froides et les journées pas trop chaudes afin que les érables coulent bien et que l'on puisse y récolter son eau en abondance.

Voilà que cette année, Dame nature s'est moquée de nous. Au Québec, nous avons été dans les régions plus au Sud, presque 14 jours sans gel avec des températures estivales rarement vues pour la période. Par contre, nos érables coulaient toujours. Plus précisément dans ma région de Lanaudière, nous avons fait bouillir la sève pour la première fois le 11 mars et voilà que le 1er avril, tout était fini. Toutefois, j'ai constaté que le sirop avait très bon goût.

Cette année, les régions plus froides du Québec ont connu une bonne saison et nous comprenons pourquoi. La température chaude que nous avons eue en mars, ne les a pas affectés autant que les régions chaudes. Mère nature a encore une fois, montré ses variantes qui ont influencé notre saison des sucres.

Cela dit, j'espère tout de même que dans chacune de vos provinces et chacun des états américains, ce fut une saison intéressante et lucrative.

Cécile B. Pichette
Présidente
NAMSC

GOING AWAY

We are going to be gone for the summer — from June 1st until approximately August 20th.

We are heading to Alaska again, for the 5th time in 20 years. We are driving in our 22' RV.

We will have limited access to phone and e-mails, so any inquiries may take a while to be addressed.

Roy, Editor

IMSI NEWS

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

Maple production season 2012 was a challenging one to navigate through with the unprecedented warm weather conditions, which affected both the timing and duration of sap flows. Preliminary production reports from both Canada and the US suggest that producers who tapped early faired better than those who waited or followed their historic calendar and overall production may be better than anecdotal reports suggest. We can only hope that the weather experienced in 2012 is not an early indication of the more extreme effects of climate change as is predicted by some specialists. It will be very interesting to see the final crop reports for the different jurisdictions.

MONITORING FOR ADULTERATION OF SYRUP

The IMSI plans to continue its service of facilitating laboratory testing of syrups in the marketplace suspected to be adulterated. Since the laboratory used in the past to process samples has discontinued its service, the IMSI is actively working to identify an alternative laboratory or laboratories for the testing. The IMSI is also closely monitoring related research to develop adulteration protocols by Centre Acer in Quebec. When this work is completed it may enhance North American capacity for adulteration testing.

STANDARD MAPLE GRADES INITIATIVE

The IMSI continues to monitor progress among maple regulatory agencies in both Canada and the United States. In general, follow-up is proceeding well with most regulatory agencies engaged on the file. Timing of implementation of the standard will largely depend on when regulatory approvals are obtained. Once this has been achieved, it will be necessary to ensure that new or modified colour classification kits are available commercially. Related market trial exposures in Canada and the US are expected to yield useful information to assist full implementation of the new standard. Government agencies have been asked to allow a transition period to facilitate adoption of the new standard. This will alleviate any concern regarding label inventories. For further information, Digest readers are asked to contact Dave Chapeskie (English language) or Yvon Poitras (French language).

NUTRITIONAL AND POTENTIAL HEALTH BENEFITS PROJECT

The IMSI has now finalized a nutritional poster and rackcard (English and French versions) for maple syrup. The electronic files for these resources can be obtained from the IMSI's Executive Director on request. They can be adapted as needed to incorporate the producers' or packers' contact information etc. The IMSI has also produced a limited number of maple info CD's which incorporate the rackcard, the poster, related scientific papers and other information

related to nutritional and potential health benefits of maple syrup. The rackcard, poster and detailed information contained on the CD will also be posted on the IMSI website as soon as current efforts directed to refresh and modernize the website are completed. These maple resources have been developed to be used for awareness and education purposes.

Submitted by:
Dave Chapeskie, R. P. F.

NAMSC / IMSI – Future Convention Dates and Sites

2012 • October 21-24 Mystic Marriott Hotel & Spa, Mystic, Connecticut
2013 • New Brunswick
2014 • Nova Scotia
2015 • Pennsylvania
2016 • Vermont
2017 • Quebec
2018 • New Hampshire
2019 • Minnesota
2020 • Wisconsin

MAPLE HALL OF FAME

On May 19, 2012, the Maple Hall of Fame in Croghan, New York inducted two new members.

DAVE CHAPESKIE

Dave Chapeskie was raised on a farm in Renfrew County in central Ontario. He enjoyed working on the land as a youth and his family's primary income was derived from trees and woodlands growing on the farm and within the regional area. After leaving the farm in 1970, he pursued a career in forestry and completed both Bachelor of Science and Master of Science degrees in Forestry from Lakehead University and the University of New Brunswick respectively. He has been a Registered Professional Forester (Ontario) since 1977.

While a University student, Dave worked in various forestry roles on public land in central and northern Ontario. In 1978, he began his career as a Management Forester with the Ontario Ministry of Natural Resources and worked in support of private land forestry and fast growing hardwood technology development and transfer programs in eastern Ontario. His entry into working with Ontario's maple syrup industry began in the 1980's when he started working in support of Ontario's maple and farm forestry awareness and education programs in close collaboration with the late Clarence Coons. During this period, Dave continued his work with farm forestry programs with the Ministry and at the same time assumed the role of Provincial Forestry Specialist for White Pine in Ontario.

In 1993, Dave was hired by the Ontario Ministry of Agriculture and Food and was employed as an Agroforestry Extension Advisor for maple and other aspects of farm forestry. His new role included teaching courses in farm forestry at Kemptville College of Agricultural Technology. While working in this capacity Dave helped obtain support for the construction of a new Agroforestry Education Centre and subsequently for the installation of a modern maple syrup production facility at the College. In the 1990's he had a major role in obtaining assistance for the establishment of the Eastern Ontario Model Forest Program, which in itself has had a strong role in supporting the maple syrup industry in the region over the past 20 years. In 1998, Dave became heavily involved in assisting the delivery of ice storm recovery programs in support of Ontario's maple syrup industry. These programs were developed collaboratively with the Ontario Maple Syrup Producers Association and proved to be comprehensive and effective: including financial assistance, education and research components. About this time, Dave assumed the role of Agroforestry Specialist in Ontario with an emphasis on supporting the maple syrup industry.

Since 1995, Dave has been involved in supporting the North American maple syrup industry. In that year, he assisted with planning the Annual NAMSC and IMSI Annual meetings, which were held in Kingston, Ontario and began participating on the IMSI's Board of Directors as an Advisor. He has served as an author or co-author for numerous

maple industry publications. This included serving as a co-author for the North American Maple Syrup Producers Manual (2006) as well as the very popular publications Guide to Maintaining the Health and Productivity of Sugar Bushes and an Instruction Manual for the Design, Installation and Maintenance of Plastic Tubing Systems for Sap Collection. Dave has also been an author and contributor to maple research publications and quality assurance manuals over many years. While some of these products originated in Ontario, over time they have made their way into the other provinces and states benefitting the broader industry.

In 2008, Dave decided to take early retirement from the Ontario Public service after 31 years of continuous service. Shortly thereafter, he assumed his current role as Executive Director of the International Maple Syrup Institute. He has served and continues to serve the international maple syrup industry in a leadership role providing information, guidance, advice and support. He has lead the IMSI's Standard Definition, Grades and Nomenclature initiative since 2002 and has provided support and guidance for other important projects, including the planning of the 2010 NAMSC-IMSI Annual Meeting (Ontario), the IMSI's Maple Nutritional and Health Benefits project and others.

When asked what his motivation is to continue his work in support of the maple syrup industry after so many years of dedicated service, Dave responds "Trees and Woodlands have been so important to our family's livelihood and way of life and I especially enjoy working with maple people. The continued support provided by my wife Linda has been essential" Dave resides with Linda on a farm property near Spencerville Ontario. Linda and Dave have two grown children Mark and Kelly.

MICHAEL GIRARD

Many new maple syrup producers start out as hobbyists with a few taps and boil down the sap on anything but a commercial evaporator and Mike Girard was no exception. He started sugaring at the age of 11 on the family dairy farm in Simsbury Connecticut. This was the beginning of something that would become a lifelong avocation and a significant part of his life.

In the spring of 1961 Mike with the help of his family tapped a few trees along the driveway and boiled sap in a stainless steel milk pail on the kitchen gas stove. His mom quickly moved his operation to an old woodshed and a retired wood fired kitchen stove with a large commercial kitchen pan. The next season the operation advanced to a used 2' x 4' Grimm flat pan on a block arch and finally in 1964 Mike talked his father Lionel into a new evaporator. That summer on one of their trips to Canada they stopped at a small tin shop in Valcourt, Quebec and ordered a new 2½ x 7' B.S. Teknik evaporator. Now with a new evaporator you need a larger sugarhouse and more taps right? Right. With the help of Mike's brother David they converted an old farm shed into a sugarhouse and proceeded to work their way up to 600 buckets by 1966. Their trees were within a mile or two of the

farm and sap was gathered for several seasons with a Farmall Super H and an old Grimm gathering tank on a trailer.

The idea of sugaring first came to Mike on one of his trips with his dad in a tractor trailer going to Quebec for a load of hay. While traveling on Route 5 through Putney Vermont, Mike noticed an old roadside sugarhouse with some folks gathering sap with a tractor and sled in a snowy sugarbush. That looked like fun to him as it would to any eleven year old farm kid and his dad said "sure it looks like fun when you're sitting in the cab of a warm, dry truck!" His dad continued with "sugaring is a lot of work and not worth the effort". Well, that's all Mike needed to hear. He was convinced that he was going to give sugaring a try. Talking to his dad later he learned that his grandfather was a sugarmaker in Valcourt, Quebec years back and his dad remembered the family sugaring when he was a kid.

In the late 60's things were changing on the farm and the Girard Family was transitioning from farming to construction and developing their 150 acre farm. By the early 70's they had completed the subdivision roads and developed building lots. Mike had built a home with a new sugarhouse in one corner of the old farm and now had a "suburban" sugarhouse. They had many visitors and sold most of their syrup at the sugarhouse during the season. Mike's wife Connie, who has since passed away, his brother Greg and young son Mike helped with sugaring chores. Trees were getting harder to "rent" around town and remembering back to the many trips up through Vermont and Quebec in the 60's Mike thought it was time to own a real sugarbush up north.

After finishing up the '76 sugaring season in Connecticut Mike began looking around Vermont for a sugarbush. During one of his searches in southern Vermont the real estate agent mentioned there was an old sugarbush a mile over the Vermont line in Massachusetts. Half-heartedly he agreed to have a look. It turned out to be a roadside sugarhouse built in 1887 with about a thousand taps on the hillside behind it. Though it wasn't in Vermont it was exactly what Mike was looking for.

In August of 1976 Mike bought the place with a lot to do before any syrup could be made. By the time spring came a used 5' x 12' Small Brothers wood fired Evaporator was installed along with three miles of tubing. Tubing was a new experience for Mike having used only buckets in Connecticut. The only installation instructions given were that it all needs to run downhill. Needless to say there were some mistakes made and corrected over time but the best part was that all the sap flowed by gravity right into the sugarhouse. Early on Mike added a vacuum pump creating a new challenge of how to operate a sugarhouse 80 miles from home. One issue was how would the vacuum pump be turned on and off and then how would he know when the tanks were full. After some thought, Mike devised an on-off control system that would operate the pump by timer and high-low temperature sensors. He later jury-rigged a security system to monitor sap elevation in the tanks that would call him by phone which told him the first tank

was full and it's time to get up there and start boiling!

For the first twenty-four years in Heath there were many changes. During that period a neighbor, whose grandfather once operated this sugarbush, helped grow the operation to 6,500 taps by 1992. They tapped a couple of abandoned maple orchards and roadside trees and added an RO. In 1997 with the passing of his neighbor, Mike, his wife Charity and son Mike decided to cut back to the 800 trees in their own bush with the intent of making it fun again. They proceeded to update the sugarhouse with a new Darveau 3½' x 12' oil fired evaporator, replace the tubing system and added some new technology such as air-injection which was the first set-up of its kind in the U.S. The sugarbush is a certified Tree Farm and Mike has planted hundreds of sugar maple seedlings including some from Vermont's "super sweet" tree program back in '77. With nurturing over the years some of these sweet trees were tapped for the first time in 2010.

Mike is proud to say that the Girard family tradition of sugar making is being passed on to his son Mike who has helped him sugar for over 30 years and who now spends most of the season in Heath. It is appropriate that instead of his son helping Mike, it is now the other way around.

From the 1970's to the present, Mike has been intimately involved in the maple industry locally and nationally through its supporting organizations. Notably, he was one of five individuals who organized the Maple Syrup Producers Association of Connecticut. He served as its first President, Coordinator, and he is presently a member of the Board and a Life Member.

On the international level Mike became involved with the North American Maple Syrup Council in 1977. He has served many positions in those 35 years with the NAMSC including Delegate or Alternate Delegate for Connecticut or Massachusetts, Secretary / Treasurer and President. His committee participation included serving as treasurer or chairman of the NAMSC Research Fund for several years and more recently the development of the Maple Research Fund Alliance. Mike is a member of the Massachusetts Maple Producers Association, International Maple Syrup Institute and the Vermont Maple Sugar Makers Association. He currently serves as the Executive Director of the North American Maple Syrup Council.

Whether contributing to the industry through his participation in committees crafting by-laws, monitoring strategic planning, assisting with organizing annual meetings or providing historic information from his collection, Mike has unselfishly offered knowledge gained from his personal and business experience along with what he learned from those who mentored him over the years, many of whom he is joining in the Maple Hall of Fame.

Mike and his three brothers have owned and operated Simscroft-Echo Farms, Inc., a family owned road and utility construction company for 40 years. He resides in Simsbury with his wife Charity and between them they share eight children - Mike, Ellen, Rebecca, Ethan, Alexandra, Andrew, Gretchen and Nora.

The spring of 2012 was Mike's 51st year sugaring. He will tell you that he has enjoyed every season and no two seasons were ever alike. "While there have been many long trips to Heath over the past 35 years once you get up in those hills it makes the trip worthwhile", Mike stated. "I tell people that being in the construction business has given me the wherewithal to be able to afford to sugar. A good analogy might be comparing sugaring to owning a boat . . . you need to pay constant attention to it, you only get to enjoy it for a short time each year and there is always something to fix. You can also justify it all by the enjoyment, memories and unique pleasure of the season's finished product."

Mike is proud to be among the select group of men and women who have been inducted into the Maple Hall Fame and wishes to thank the Hall of Fame Committee and the American Maple Museum for this honor.

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For more information contact:

Michael A. Girard, Chairman PO Box 583 Simsbury, CT 06070
Phone 860-658-5790 FAX 860-408-4667 Email: mgirard@simscroft.com
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Phone 715-536-7251 FAX 715-536-1295 Email: maplehollowsyrup@frontier.com
The NAMSC Research Fund is a non-profit, volunteer based committee of the North American Maple Syrup Council, Inc.

TAPPING INTO CONNECTICUT

The North American Maple Syrup Council & International Maple Syrup Institute

2012 Annual Meeting October 22nd - 25th Mystic, Connecticut

Hosted by the Maple Syrup Producers Association of Connecticut

Connecticut maple producers invite everyone to the 53rd annual meeting of the NAMSC and 38th annual meeting of the IMSI to be held at the Mystic Marriott Hotel & Spa in historic Mystic Connecticut. The convention formally begins on Monday October 22nd and concludes with the annual awards banquet on Thursday October 25th.

This New England shoreline town is rich in historical fame including the home of the first nuclear submarine The Nautilus located at the Submarine Force Library & Museum; the R.M.S Titanic exhibit at Mystic Aquarium & Institute for Exploration; B. F. Clyde's Cider Mill which is the oldest steam powered cider mill in the country; and the Charles W. Morgan which is the last surviving wood constructed whaling ship harbored at Mystic Seaport Village. We will visit these and others as part of our Connecticut tour on Thursday. We will also have companion tours planned during the convention as well as companion activities at the Hotel.

All NAMSC & IMSI meetings, workshops and technical sessions will be at the Mystic Marriott Hotel & Spa, 625 North Rd, (RT117) Groton, CT 06340, (exit 88 off I-95). For those of you flying in, the T. F. Green Airport (PVD) in Providence, R I is a 35 minute drive and Bradley International Airport (BDL) in Hartford/Springfield is about a 60 minute drive to the hotel.

Registration Packets for conference attendees will be sent out to regular attendees soon but if you want to be sure you receive a mailing, please email Ron Wenzel at info@ctmaple.org with your name, address, phone and email address or, if you prefer, you can write to Ron Wenzel, 522 East Street Hebron, CT 06248. Trade show exhibitors or those placing advertising in our NAMSC / IMSI Program Book should email Ron at info@ctmaple.org for more information. Registration forms are also available on line at www.ctmaple.org

We look forward to you joining us in Connecticut in October and are confident you will enjoy your visit to the Constitution State!

Ron Wenzel
2012 Host Committee Chairman

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HIGH VACUUM IN GRAVITY TUBING

By Timothy Wilmot

Many maple producers consider gravity tubing, or tubing without the use of a pump, to be a poor substitute for a modern system with a pump, extractor, and the latest tubing arrangement. Sap yields from gravity systems are often half or less compared to yields of a pumped system. Not everyone, however, can afford the latest technology. Obstacles to the use of modern equipment include the overall expense, difficulty fueling a pump especially where electricity is not available, time needed for maintenance of a pump and extractor, and the impractical nature of adding pumps for separate stands of a few hundred trees each. Thus, gravity tubing systems are widely used in many small to mid-sized operations throughout the maple region. This article summarizes the past 3 years of my research on gravity tubing, or tubing without a vacuum pump. Studies have occurred mostly at the University of Vermont Proctor Maple Research Center (PMRC) in Underhill Center, VT.

Options for achieving high vacuum and high sap yield at low cost are limited. Perhaps the most extensive work available on the subject of "natural" vacuum, or vacuum achieved without a pump, dates from the early 70's, when PVC tubing and less efficient fittings were all that was available. In a summary article based on several years of research, Robert Morrow of Cornell (1) concluded that very high numbers of taps per line (50-100) and relatively shallow slopes (5-15%) were needed to achieve the best vacuum in gravity tubing. The levels of vacuum that Morrow recorded rarely exceeded 10 inches of mercury-which would hardly be considered satisfactory today. Since the theoretical limit of natural vacuum is over 29 inches of mercury at sea level, a more efficient and productive system than the ones described by Morrow must be considered.

To achieve natural vacuum, three things are necessary: 1) a continuous leak-free line, 2) a drop in elevation from the tree to the bottom of the line, and 3) enough sap in the line to create a gravitational pull (suction) on the taphole. Slope is crucial. For producers where an elevation change of 30, 40, 50 or more feet can be obtained between many of the trees and the tank, good natural vacuum is a real possibility.

METHODS

I began experimenting with various sizes of tubing in 2010 and 2011 with the aim of finding a size smaller than the standard 5/16" inside diameter that would maintain a long column of sap on a slope during most sap runs. How would such a system work? When sap is trapped in a tube that is sealed at the top but not the bottom, atmospheric pressure pushing on the bottom of the tube keeps the sap in place. This is assuming that no air (caused by a leak such as a loose spout, a squirrel bite, a poor connection between tubing and fitting) gets into the top of the tube – if it did, then the sap would run down the tube

without creating a vacuum. The suspended weight of the sap pulls on the taphole, and as the column of sap lengthens, the vacuum on the taphole increases. As more sap and gas from the tree is added to the tube, the sap moves downhill, but under the right conditions enough stays in the tube to maintain the vacuum. One way to increase the column of sap is to reduce the size of the tube. Tubing that is 3/16" inside diameter has 36% of the volume per inch of 5/16" tubing, and a given quantity of sap will extend in the tubing for almost 2.8 times the length of the same quantity of sap in 5/16" tubing, and thus could exert a proportionally greater suction on the taphole. Given enough sap, high natural vacuum should also be achievable in larger diameter tubing, including standard 5/16" tubing. However, in larger tubing the surface tension at the sap/air interface is lower, and it is more likely that the sap will slip down the tubing without maintaining a long column unless there is a high flow rate.

After experimenting with tubing of different sizes, I chose 3/16" interior diameter, rather than something smaller, or larger, for several reasons: 1) when made of polyethylene with a standard 1/16" wall, similar to most maple tubing, it is strong and stretches very little; 2) it has the capacity to carry high volumes of sap, and 3) fittings for use with this tubing are readily available. Sources for tubing and fittings are shown at the end of this article. Spouts used in all these experiments were standard 5/16" maple spouts from a variety of manufacturers, and they were adapted to 3/16" tubing by connecting a short piece of standard tubing to the spout and using a reducing fitting to connect to the smaller tubing. At the bottom of lateral lines that were connected to mainlines, another fitting was used to connect to 5/16" tubing, which was then connected to the mainline fitting.

A number of experiments have been performed to date to compare vacuum and yield from 5/16" and 3/16" gravity lines on similar slopes and with similar tap counts, as well as other experiments to test the vacuum and yield that can be achieved using gravity on a variety of different slopes and with a variety of different numbers of taps per line.

RESULTS

Vacuum: Experiments performed in 2011 and 2012 using individual lateral lines showed that with 19 or more taps and a vertical drop of 50-100 feet, high vacuum (24-27 inches Hg) could sometimes be achieved in 5/16" lines, especially during periods of high sap flow. In contrast, virtually all 3/16" lines maintained these vacuum levels during periods of high or even minimal flow. For example, in a 2012 experiment in Willison, VT, comparing vacuum in 3/16" and 5/16" lines about 400' long, the best 5/16" line reached 27" of vacuum for a few days, while the best 3/16" line reached 27" vacuum for most of 5 straight weeks. In 2011 several 3/16" lines of varying length with 8-20 taps each reached and maintained vacuum of 24" or more for the entire season that sap flowed, while 5/16" lines reached high vacuum only during strong sap runs. In relatively short lines (approximately 150') and fewer taps, the contrast between vacuum in 5/16" and 3/16" lines was striking, with little or no vacuum

in 5/16" lines. Table 1 shows vacuum levels in 10 lines during the hot weather that followed a freeze on March 11, 2012.

Table 1: Daily vacuum readings in 3/16" and 5/16" lines in mid-March, 2012, at the PMRC. The last freeze prior to the dates shown was the night of March 10-11.

Tubing	5/16"					3/16"				
Line #	1	2	3	4	5	6	7	8	9	10
Taps/line	10	5	5	6	8	8	8	6	6	4
	Vacuum (inches Hg)					**Vacuum** (inches Hg)				
3/12	0	0	0	0	0	26	27	23	27	27
3/13	0	0	0	0	0	25	27	23	27	27
3/14	0	1	0	0	1	26	27	23	27	26
3/15	2	1	0	0	1	26	27	23	27	26
3/16	0	2	0	0	0	25	27	23	28	26
3/17	0	0	0	0	0	26	27	23	28	26
3/18	0	0	0	0	0	26	27	23	28	26

Flow Rate: Sap flow rate over a period of 5-10 minutes was recorded daily in 2011 season to estimate comparative yields between 3/16" and similar 5/16" lines. In every instance where the sap was running, sap flow rate in 3/16" lines exceeded the rate in 5/16" lines. The maximum rate recorded during a strong sap run, on a 3/16" line with 22 taps, was equivalent to a rate of over 6 gallons per day per tap, or approximately 1 gallon every 10 minutes through this line. Under these conditions, sap flowed very rapidly through the bottom of the line. It is unclear if this is the maximum rate that could pass through 3/16" tubing – but it is evident from these results that tubing of this size can support a high flow rate. This rate exceeded the maximum rate recorded in any 5/16" tubing with a similar number of taps, although a greater number of taps on a 5/16" line might have resulted in a still higher flow rate.

Sap Yield: Sap yield in gravity lines in 2012 was equivalent in several instances to the yield achieved by the pumped tubing system at the PMRC which used high vacuum Busch rotary claw vacuum pumps and wet/dry conductor lines (Table 2). Although these totals concluded on March 22, which is the last day that sap was boiled at PMRC this year, it is notable that high vacuum levels and high flow rates were again seen in most lines through the second week of April, after freeze/thaw weather resumed.

Table 2: Sap yield from 2/22 through 3/22, 2012, from the PMRC vacuum system and from gravity lines in various locations.

Location:	5/16" tubing	3/16" tubing
PMRC vacuum system	18.5 gal/tap	
PMRC 150' gravity lines, 4-10 taps/line	4.1 gal/tap	19.8 gal/tap
PMRC 700' gravity lines, 22 taps/line	11.5 gal/tap	18.2 gal/tap
Williston, VT 400' gravity lines, 19 taps/line	7.6 gal/tap	14.8 gal/tap

DISCUSSION

Setting up a gravity system for maximum vacuum and sap yield requires an understanding of some of the differences between this type of system and one that relies on a vacuum pump. In a system where the vacuum is generated by a pump, the maximum vacuum will be closest to the pump, and may diminish with distance from the pump. The whole tubing system, including mainlines, is essentially one unit, and a leak anywhere in the system can affect the vacuum throughout the system. The pumps used in these systems, such as the typical vane or liquid ring pump, generate vacuum by displacing air, and the system must be closed using either an extractor (releaser) or a sealed vacuum tank for sap, in order to allow sap to be collected without breaking the vacuum. In contrast, a gravity line does not rely on air displacement; instead, vacuum is generated in each closed lateral line by the weight of the sap. In a gravity line that is leak free, the highest vacuum is at the top of each lateral line, and diminishes to nothing (atmospheric pressure) at the bottom where the line joins a mainline or empties into a tank. Thus trees lower along any line may be subject to some, but not the maximum possible vacuum, unless there is a significant amount of vertical drop on the line below the tree. For this reason, the ideal arrangement would be a line connecting trees near the top of a slope, and then a stretch of line below these trees continuing down the slope to the tank or mainline. This may not always be possible.

Although great diligence is necessary to keep spouts tight and lines leak free, the advantage of natural gravity vacuum is that each line is independent-unlike vacuum coming from a distant pump, the vacuum is generated in each individual line and a leak in one line does not affect other lines in the system. Mainlines should slope gradually in order to drain the sap into a tank, but mainlines in this system will not be under vacuum and could in fact be open at the far end in order to facilitate flow of sap down their length. Thus, in setting up a system, place the mainlines across the slope at a shallow angle, and run the lateral lines straight up

the slope where they will generate the maximum vacuum due to elevation change.

Below is a summary of many of my findings to date concerning gravity tubing, along with some suggestions for a successful gravity layout. Note that this is still a work in progress, and many more suggestions, methods, and improvements may be added in the future.

- For a successful gravity collection, much of what we know about best management under vacuum applies here: good tapping practices, new spouts, good quality materials, diligent checking for leaks.
- A vertical drop below the taphole(s) is necessary in order to generate natural vacuum, although there is no fixed number regarding what this drop should be. A full tube of sap one foot long hanging from a taphole would create 0.88 inches of mercury vacuum; thus a line that descends 20' below a taphole and is completely full would create 17.6 inches of vacuum; however, the line will never be completely full. Even if the line descends only a modest distance below the taphole, some vacuum will be generated in a tight system.
- While the maximum number of taps to put on a 3/16" line is yet to be determined, I have had success with lines up to 22 taps during strong sap runs (see above): under these conditions the sap flows very rapidly through the line, and because of this may arrive cooler at the tank than in a pumped line.
- For high vacuum, the minimum number of taps to place on a 3/16" line approximately 150' long is 4 or perhaps even less; the minimum number of taps on a similar 5/16" line is as yet undetermined, but is greater than 10. This assumes a good vertical drop below most of the trees.
- A long zig zag line has achieved better vacuum and flow in my experiments compared to a branched line. A branched 3/16" line with several taps on each branch seems to become restricted at the Y or T where the two branches meet..
- Line length does not seem to be very important, as I have placed lines as long as 700' with 20 taps and achieved high vacuum and flow. A very long line with very few taps might not achieve the sap column necessary for maximum vacuum. Adding more length to the line without adding slope will not increase vacuum.
- A strong fitting is needed at the top of the lateral line. As I have not found a strong 3/16" fitting that is useful for this, I have used 5/16" tubing on the topmost tree, along with a ring fitting made for this tubing so that the line can be tightened. The line is converted to 3/16" a few feet down slope of this tree. This arrangement will not compromise vacuum, assuming that most of the slope is farther down the line.
- The successful maple tubing arrangement should consist of lateral lines going straight up a slope, and mainlines across the slope at a shallow angle. A possible method to maximize vacuum on a long but shallow slope might be to jump the lateral lines over the closest mainline, and join them to next lowest mainline running across the slope; thus adding a long section of lateral line below every tree in order to gain a long column of sap.

• Checking for leaks is critical with any vacuum system, especially in a system with no pump to overcome leaks. The standard method in a pumped system is to watch for slow sap movement throughout the line, indicating no leaks. Sap movement in a gravity line is different: as more sap is added by successive taps further down the line, the flow speeds up and can become very rapid near the bottom. While it is possible to learn from experience how to spot a leak by observing the rate of flow across a fitting, the most reliable method is to place a vacuum gauge at the top of the line. The amount of vacuum should be approximately the same for lines with the same vertical drop, and the vacuum level obtained should be repeatable daily unless a leak has appeared (Table 1) – thus low vacuum in a 3/16" line or a lessening of the daily vacuum level indicates a line that needs inspection.

• The connection to a vacuum gauge must be tight. A gauge with a 1/8"NPT stem can be screwed onto a piece of tubing (semi-rigid works best) and held tight with a hose clamp. The gauge can be attached to the uppermost part of the line where 5/16" tubing is used, as the larger tubing will help prevent sap from backing up into the gauge when the bottom of the line is frozen. Run a long dropline to the gauge and secure it to the tree in an upright position.

• Obtaining the proper tool for inserting fittings into 3/16" lines is critical. Fittings cannot be forced in by hand. I have found the most versatile tool to be a two-handed tubing tool with screw type adjustment of the vise clamps, used for attaching 3/16" T's and connectors into 3/16" lines, as well as for connect-

ing a 3/16" and 5/16" line via a reducing fitting. The jaws need to be adapted to hold 3/16" tubing, either by grinding them down or building up the jaw by adding masking tape, or with the addition of a half section of 5/16" tubing. Such tools with automatic tension adjustment may or may not grip small tubing – I have found them troublesome when the 3/16" tubing is wet.

Sources for materials: 3/16" tubing can be obtained in 100' rolls from Hudson Extrusions Inc www.hudsonextrusions.com . Specify HDPE with 3/16" interior diameter. At least one maple manufacturer, Dominion & Grimm USA, will produce 3/16" tubing in 500' rolls (contact benjamin@dominiongrimm.ca). The fittings I have used can be obtained from McMaster-Carr www. mcmaster.com. Look for part 5116k15 white nylon single barbed tube fitting Tee for 3/16" tube ID, #5116k42 white nylon coupling for 3/16" tube ID, and #5116K53 White Nylon Single-Barbed Tube Fitting Reducing Coupling for 1/4" X 3/16" Tube ID. This coupling works well to connect 5/16" to 3/16" tubing. All of these materials are food grade.

Future articles will appear with further research on gravity. Feel free to share your own experiments and questions regarding gravity tubing with me - you can find my contact information at http://www.uvm.edu/~pmrc/?Page=PMRCstaf.html

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REFERENCE: 1. Morrow, R.R. 1974. Vacuum and maple sap flow. Maple Syrup Digest 13 (4).

CROP REPORTS FOR 2012

CONNECTICUT

By: J. Mark Harran

For many, particularly those in the western half of Connecticut, the 2012 season lasted about half as long as "normal." and produced about 50% of the expected crop. For those who tapped in early January or are located on the east side of the Connecticut River, the yield was better, but far from great. The key drivers were an extremely mild winter coupled with minimal snow fall and an early warm up (75 degrees F in mid-March). For me, the season was over by March 10 compared to April 3 in 2011 and March 28 in 2010.

As if an omen for the disappointing season, a freak and unprecedented snow storm on October 29. 2011 caused a postponement of our membership meeting on November 5. Up to 20 inches across the state caused huge power outages (most trees still had their leaves, so the heavy wet snow resulted in limbs and whole trees falling on power lines), which overwhelmed our power company (some areas without electricity for 2 weeks). Our meeting site was hit hard and had no power on the meeting day, so on very short notice the meeting was postponed and rolled into our scheduled meeting on January 14.

We recovered!! Indeed, we had a great meeting on January 14 (a mild day with no snow). The postponed membership meeting, which included the election of Officers and Directors, was followed by some great presentations. Bruce Gillilian, Leader Evaporator, kicked off with a presentation on how to maximize the effectiveness of an evaporator (Boiling 101 was the title). Then, Dave Chapeskie, Executive Director of IMSI, covered the material available from IMSI to support the nutritional benefits of maple syrup and the status on the new grading classification system, which is being test implemented by two producers in Connecticut this year. Finally, Fred Pike, from Goodrich Maple Farms, explained the benefits of an RO for the small to medium producer. All-in-all, the meeting was well attended and I think most everyone went home with at least one new or refined idea on how to improve their production and sales for the 2012 season and beyond.

IMPORTANT REMINDER: The IMSI and NAMSC meetings will be held in Mystic, Connecticut this year over the period of October 21 through 25. I am sure the meetings and presentations will be as productive and worthwhile as ever and Mystic is a great place to visit. It is one of the oldest seaports in North America and has lots of attractions, including a just opened exhibit covering the 1912 sinking of the Titanic, including the recently recovered artifacts from it, some great old sailing ships at the Mystic Seaport Museum and tours of the Nautilus, the first U.S. nuclear powered submarine. All the attractions are easily accessed from the Marriott, the convention hotel.

INDIANA

By: Keith Ruble

The Indiana maple producers were very concerned about the unusual

warm weather we had all winter and how it would affect the 2012 maple season clear up until trees were tapped. Tapping began in mid to late January in the south, to late January to early February in the north regions of Indiana. I think for most maple producers, 2012 was one of the best seasons that we have had. This was the general opinion all over the state.

Most producers produced a good quantity of light and medium amber syrup with the season lasting four to five weeks. We will not have an official report of total production until the Indiana Dept. of Natural Resources completes their survey of Indiana Producers.

MASSACHUSETTS

By: Winton Pitcoff

Massachusetts had a largely 'open' winter, with the only major snowstorms occurring in late October and early March. No snow on the ground made for easy work in the woods, and many sugarmakers spent lots of time rehabbing tubing systems and getting ahead on preparations for the sugaring season.

Not only wasn't the winter wet, but it wasn't particularly cold, either. Some areas in the southern and eastern parts of the state only froze solid for brief periods of time, and even the higher elevations had unusually warm days scattered throughout the season. Sugarmakers spent lots of time on the phone and emailing each other, checking in to see who thought the season had really begun and who was holding out, counting on there being a deep freeze still to come.

Many members set taps in early February, with quite a few having good runs and boils before the middle of the month. Members in lower elevations were all up and running a bit ahead of those in the hills, partly because they are more used to a somewhat earlier start and also because the thaws were coming faster and more regularly. By the beginning of the last week in February pretty much everyone was getting good runs.

Members reported average to slightly-below average sugar content. Most reported making a lot of Light Amber, and all reported excellent taste for everything they made.

The season came to an abrupt end for everyone when we were hit with an extended period of hot weather - 70s and 80s every day in the third week of March, and nearly two weeks straight of above-freezing nights.

A few MA sugarmakers reported a good crop - at or around 100% of what they consider 'normal.' Far more reported below-average, though, with most saying they produced between 50 and 75% of a good crop. Nowhere near as good as the 2011 bumper crop, of course, but far better than the disastrous 2010 season!

MICHIGAN

By: Larry Haigh

Greetings from the Michigan Maple Syrup Association. The 2012 maple season in Michigan was anything but sweet. The January thaw came shortly after the holidays and saw temperatures in the 60 degree plus range and it never ended. January,

February and March were all very warm. We had little if any snow and no frost in the ground. Not ideal conditions for a good sap flow.

A few folks in southern Michigan elected not to tap at all thinking that the buds may have started in January and that the sap would not be good. A few others tapped as early as January 31st. A very large majority of producers tapped in mid-February. The folks who did tap early reported having an about average year harvesting around a quart of syrup per tap. One who tapped January 31st had a very good year as did a few others in our area of south central Michigan. For the traditionalist who waited until March 1st to tap, it did not turn out so good. I heard of many who tapped then who only boiled 2 or 3 days and harvesting about half a crop. Most folks around here were all done around March 12th. In the Upper Peninsula it was not a good year at all. They did not have warm enough weather to get started early yet they all ended early. They began tapping around March 1st and were finished by the end of March which is a couple of weeks early for them. The UP did get some colder weather around the end of March followed by some near normal temperatures. But the buds were out and no decent syrup was made.

In summary, it was warm way too early and stayed warm all season long with very few nights cold enough

to produce a decent sap flow. I estimate that our state average will be about one half of a good crop. Oh well, better luck next year.

MINNESOTA
By: Stu Peterson

We could just send you a piece of paper indicating "This page intentionally left blank!"

Minnesota producers are generally reporting the worst season anyone can remember. We went from February type weather to June type weather in about four days and pretty much stayed there. Numerous members are reporting 0-20% of "normal" with a very few (the best results) approaching a 40-50% crop. We will know more after our annual meeting in May. Wasn't a good one!

NEW BRUNSWICK
By: David Briggs

The season In New Brunswick was a crazy one to say the least. My father and many in the southern part of the province experienced a less then normal production.

Those who were ready got some earlier runs in the first part of March. It seemed as though it was starting about a week earlier than normal. With very little snow this winter most thought it would start early and maybe end early and it did. After a few runs the weather decided to turn for the worse. We experienced a very hot spell of weather that lasted for about 4-5 days. The weather got into the high 20's reaching 27-28 Celsius. This stopped sap flow and had many producers worried. The weather did turn back to normal and some more runs came although the syrup quality was much darker then it should have been. To summarize, the southern area received a below average production this season anywhere from 50% to 80% of a season with darker quality syrup made.

The northern part of New Brunswick experienced a similar situation although they seemed to come out a bit better than the south probably because they had a lot more snow cover thus being able to handle the hot temps. better. It did vary in the north also depending which side of the hill you were on. One producer I talked to had a bit less than average season but produced a lot more of the lighter grades than normal. Although the north had more snow than the south, they still started about a week earlier and finished earlier then usual. Many received a 60% to 90% of a season.

I did here of reports of some ropey syrup being made this year catching a few people by surprise, never seeing it before and wondering what happened. It seems the hot weather was playing havoc and creating some wonderful(sarcasm) bacteria in some producers systems. The pounds per tap varied all over the province. All in all the season didn't turn out to be a disaster as many thought it would.

NEW HAMPSHIRE
By: Robyn Pearl

The NH Maple Producers Association members have reported the fol-

lowing for the 2012 season. Taps were set out at a regular time for most producers, with some reporting earlier tapping due to the mild conditions. Boiling came early for many, with up to 14 days in advance of the average timeframe. The earliest reported boiling in the southern part of the state was February 7th. The last boil of the season came early for many producers in the southern part of the state as temperatures rose into the 70's and 80's for five days forcing the buds to develop and cause undesirable sap for boiling. Many producers ended the season around March 19th due to the warmth. Those in the northern part of the state whose trees had lesser developed buds were able to better withstand the heat and continue to collect and boil without much affect. The latest reported boil was April 7th. The majority of the syrup made was in the medium to dark amber grades, but a fair amount of light was produced, and many producers reported making B and commercial grade. The volume of syrup made varied greatly which seemed most dependent on geography, with the seacoast producers showing the strongest season. Most producers found they had 50-66% of an average crop, but reports of only 33% of an average crop was not unusual. Overall, the season ran about 7-10 days early in its start and finish, with a lower production than anticipated due to the warmth.

NEW YORK

By: Eric Randall

Preliminary data from the several regions of New York's maple industry show fairly wide variation in production, start dates and end of season. The State is large, geographically and climatically diverse and sugaring is generally influenced (good and bad) by elevation, proximity to the Great Lakes and this year by a general lack of snow cover in the woods. Most of our areas reported that if early tapping and vacuum were in place there was a season. Those who waited for the traditional first of March trek to the woods missed a sap season. Western and Southern Tier Counties were tapped by late January, early February and most producers had made half a crop or more by March 1st. Other areas of the State didn't have temperatures sufficient to allow sap flow even though many were tapped.

Overall, New York will probably tally between half and two thirds of a normal crop. The Catskills and Lewis County areas were perhaps most severely and negatively impacted by the short season. Statewide areas reported that their sap stopped flowing by early March after several days of 80 degree "summer" weather. Nearly all reports included comments dealing with lack of lake ice, no snow, soft maples in flower on March 5th and daffodils for St Patrick's Day.

Clearly, last year was a record season for production highs and this year will go into the record books as the one not to repeat any time soon with record high temperatures, lack of snow and mediocre production with great quality. Nearly everyone contacted is looking forward to a better season next year.

NOVA SCOTIA
By: Arvard Bentley

Nova Scotia's maple season started a little early in 2012 with most Producers boiling in February. Some were still boiling in April. The consenses is that the crop was all over the place, some only had half a crop and others had above average yield. Saying this, the guessimate is that 70 to 80% of a crop was realized.

PENNSYLVANIA
By: Wayne Clark

The annual spring meeting of the Pennsylvania Maple Producers Council was held April 14 at Pleasant Gap, near State College, PA. With delegates attending from each of the five different local associations in PA, we got a good idea of production in the state.

Just about everyone reported below average to average production with a lot of light amber syrup. There was a good flavor through all grades. Two producers reported good production, both on gravity. One had replaced about two-thirds of his tubing with new, which may have helped. One larger producer with about 80,000 taps reported two-thirds of a crop.

Several reported low sugar content in the sap, especially at the end of the season. The general consensus was that this was a year to be ready and tap early. Several people started the end of January into the first of February. Most finished the week of March12, at least two to three weeks ahead of normal for this area.

At the Pennsylvania Farm Show, held the first week in January, Larry Hamilton of the Potter-Tioga Association, scheduled a tree tapping ceremony with US House Representative Glen Thompson and PA Representative Martin Clauser. It was held on March 17 at his sugar house in Ulysses, PA. Ironically, his season was over before his tapping ceremony occurred.

QUEBEC
By: Jean-Marie Chouinard

In Québec, we estimate that the 2012 maple syrup production will be normal despite warm weather of the beginning.

In the western and eastern areas, the season started around end February and finished end March.

For the other areas, the production finished after mid-april.

Depending in which area and localisation of the maple grove, producers will have a tap average around 2 pounds or 3 pounds at the most.

The official crop report for 2012 will be available in June.

VERMONT
By: Paul Palmer

"What a strange year," was a common saying heard around VT. Very little cold weather with even less snow made tapping easy, but the season was short lived. With an early warm up into the 80's for most of a week sending the sap production tumbling. The amount of syrup produced varied widely, but certainly nobody saw a banner year. Production numbers

generally ranged from 30% to 70% of a normal crop, with those running vacuum at the high end of the scale. Producers in the colder areas seemed to fare better too. The quality of the syrup varied widely as well, with some making little to no Fancy syrup, while others made some, but it seems as though the darker grades were most prevalent. A producer's ability to process their sap as soon as possible was a key factor in their ability to make the lighter grades of syrup due to the fast spoilage in the uncharacteristic heat.

WISCONSIN

By: Fred Hedmark

The 2012 Wisconsin maple syrup season can best described as the season that didn't happen by most producers in the state.

2011 - 2012 winter was considered one of the warmer winters on record. The month of March will go down in history as possibly the warmest ever, with temperatures in the mid 70's to 80's for almost a week in Mid-March. Unfortunately the month of April was back to normal seasonable temperatures, perfect for sap flows, but the trees budded out back in March after the "summer" temperatures.

The producers in the southern half of the state were tapped in early to mid February because of the warmer winter temperatures and the lack of snow threatening to bud out the maple trees. Once the very warm temperatures arrived, their season abruptly ended after the trees budded out.

The situation in the northern half of the state looked more promising for a normal season when a snow storm dumped 24" plus of snow the end of February. Most producers tapped the first ten days in March, many using snowshoes because of the 3' of snow in the woods. Only to have all the snow melted by March 15th because of the record warmth. The temperatures in the north went from too cold to not freezing at night and record temperatures during the day.

The production totals look to about 10% to 20% crop for the producers with buckets, sap saks and tubing without vacuum. The producers with vacuum fared a little better with totals between ¼ and 1/3 of a crop. The whole state also had lower than normal sap sugar content, which contributed to the lower syrup production total.

Same as producers in the maple syrup producing region, Wisconsin maple syrup producers are already looking for a better 2013. It couldn't get any worst.

TO THE EDITOR

I received this from a maple producer in Orford, NH.

This letter was passed onto us by a lady whose whole family was born in Orford, and in the 1930's had moved on to California. Their youngest, a boy at the time at the age of 16, drove them all the way! He is now, at the age of 91, I think, and a great friend of ours. It was his sister that gave us a copy of the letter.

"Bill Godfrey," as we, the local people knew him was what you may call a wearer of many, many hats. He was a farmer, a gardner, a sawyer, a sugar maker - including candy, a basketweaver (split ash), an undertaker and an auctioneer. One busy and happy man. People just loved him. If you did him wrong once, you wouldn't get another chance. Honesty was the way of life for him. I hope I didn't leave anything out. He was so good at auctions. He would say "The bidder is bidding a quarter, with a tear in his eye!" (with a crying sound). Everyone would smile or laugh. Back them (1950's and before) times were tough and parting with their money was a bit hard! A little like today, huh? A very interesting man.

The Ford Dealer of whom the letter speaks is the father of the two I mentioned. Priscilla and her brother Mumford Kenyon. Apparently, the new Ford took them to California. The dealership was on the right hand corner at the stop sign in Fairlee, VT across the river from Orford (the building burned). Bill had a great sense of humor, he was not sending any syrup to the "Ford Dealer!".

The letter reads as follows:

April 6, 1949

Dear Priscilla,

Am shipping you one gallon syrup today price five dollars, it has been the worst sugar season of all very little made and not as good color.

I only made sixty gallons from 600 trees and have sugared four weeks to do that. Should make about 175 to 200 gallons in an average year, this makes four poor years in a row and every one gets poorer.

We had no winter only below zero three times and most of the time 20 percent above or warmer and hardly any snow.

Frogs are singing and frost most all out of backroads.

How is the new Ford going?

Hopeing syrup reaches you o.k. and I will have none for the Ford Dealer, I remain.

Yours truly,
Wm. W. Godfrey

EDITOR'S NOTE: And you thought we had a bad season – it goes to show you that if you make maple syrup you are going to have good seasons and bad seasons. Let's hope we don't have 4 poor seasons in a row!

When I started I charged $6.00 a gallon in 1960.

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"...Health Spouts with adapters produced 17gpt of sap and the CV's gave 25gpt of sap."

"I'm switching the 2nd half of my woods over to CV's next year...I can't see any negative about 250 gallons more syrup."

"My tap holes still have not dried up and I do not have vacuum."

"I figure the CV's made me about $4.40 per tap."

"...I made 74% more syrup this year than last. The check valve were the only thing I changed to help get more sap."

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PLAN TO ATTEND THE 2012 NEW YORK STATE MAPLE TOUR

The 2012 New York State Maple Tour is scheduled for July 22-24. The tour will be hosted by the Central New York Maple Producers Association and centered at the Holiday Inn in Auburn NY. The tour opens with a reception, registration and tradeshow on Sunday afternoon on July 22nd. On Monday and Tuesday, the 23rd and 24th of July, the tour will feature visits to a variety of maple operations both larger and smaller. This tour features the scenic Eastern Finger Lakes area and will include a scenic cruise on Skaneateles Lake and tour of an historic water powered flour mill. Sites include niche marketing, energy saving technologies, organic production, and will include sugarbush sites. The eastern Finger Lakes includes a number of area attractions including: wine tours and tastings, boat cruises, Merry-Go-Round Playhouse, Cayuga Museum & Case Research Lab, Emerson Park, Harriet Tubman Home - Underground Railroad Heritage Trail, William H Seward House - Seward's Folly, Secretary of State to President Lincoln and much more. Cost is set at $170 per person to include the tour, meals and the annual banquet. Registration and tour stop information will be available soon at www.cornellmaple.com and www.nysmaple.com.

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NEW YORK STATE MAPLE TOUR
July 22-24, 2012
Holiday Inn, Auburn, New York
For more information contact:
www.cornellmaple.com or www.nysmaple.com

NAMSC/IMSI ANNUAL MEETING
October 22-25, 2012
Mystic Marriott Hotel & Spa
Mystic, Connecticut
For more information contact:
Ron Wenzel at: rlwenzel@snet.net

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