

Maple Syrup Digest



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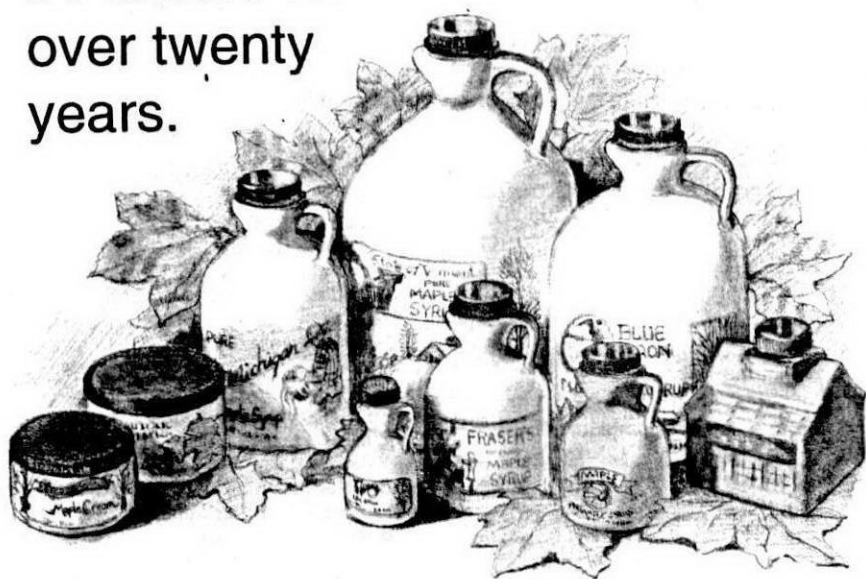
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**COVER: 2003 Inductees into the Hall
of Fame, Roy Hutchinson and**

GREETINGS FROM YOUR PRESIDENT



Every year we ask ourselves the same question, wondering what will be the nature of this year's maple syrup harvest, such as quality and quantity.

It's simple, not one year is the same. This season, even though there is always a fluctuation between each State or Province and even within each State or Province, we've noticed from the beginning difficulty in harvesting in terms of quality. Darker syrups and ill flavoured syrups were produced in many areas. The production period was extensive, particularly in Quebec which permitted the production of a considerable amount of syrup even though we cannot determine the precise volume at the moment.

What is a positive observation, is the vigorous follow-up which was done in an effort to respect the production standards which forbid the use of certain products often used in the past. Now that many have put away all of their production material, we must concentrate our efforts in commercializing what nature has generously bestowed upon us. For some, the traditional markets suffice for the disposal of their production. However, it is not the case for everyone particularly in Quebec where the majority of maple syrup is harvested. Unfortunately, the marketing efforts do not suffice to dispose of all the production.

Surplus has accumulated which gives rise to many tensions in the industry. In my humble opinion, as

much as we try to limit production, the only true solution is to increase consumption. Many different strategies can be used to favour the creation of new products, augment the added value and also maximize generics and brands promotions. It is a sad observation that more often than not, we create our own pitfalls when trying to put these strategies into place.

I have a very big wish to make, to double our efforts by working to eliminate all these pitfalls. The respect of the participants in all the different levels is essential to achieve this goal. This is what we have to work at so we can together as maple syrup producers, processors and marketers continue to develop our unique industry.

NOUVELLES DE VOTRE PRÉSIDENT

À chaque année, nous nous posons tous la question à savoir quelle sera la nature de la récolte de sirop d'érable; tant en qualité qu'en quantité.

C'est simple, il n'y a pas une année qui est pareille. Cette fois-ci, bien que ce soit toujours variable d'un État ou Province à l'autre et variable aussi à l'intérieur d'un même État ou Province, nous pouvons constater un début de période de production assez difficile en terme de qualité. Des sirops plus foncés et avec des mauvaises saveurs furent produits en plusieurs endroits. La période de production a été longue, particulièrement au Québec, ce qui a permis de produire une quantité assez appréciable même si on ne peut à ce moment en déterminer le volume précisément.

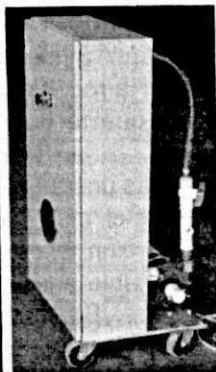
Ce qui est bon de constater, c'est le suivi rigoureux qui s'est fait afin de respecter les normes de production qui interdisent certains produits trop souvent utilisés dans le passé. Maintenant que la plupart ont rangé tout le matériel de production, il faut concentrer les efforts à commercialiser ce que la nature a généreusement donné. Pour certains, les marchés traditionnels suffisent à écouler toute leur production, ce n'est cependant pas le cas partout et particulièrement au Québec où se produit la majeure partie du sirop d'érable. Malheureusement, les efforts de commercialisation ne suffisent pas à écouler toute la production.

Des surplus se sont accumulés et engendrent plusieurs tensions dans l'industrie. On aura beau, à mon humble avis, essayer de limiter la production, la seule véritable solution est

d'accroître la consommation. Plusieurs stratégies peuvent être utilisées dont favoriser la création de nouveaux produits, augmenter la valeur ajoutée et maximiser la promotion générique et de marque. C'est triste de constater que plus souvent qu'autrement, nous nous créons nous-mêmes des embûches pour mettre en place ces stratégies.

J'ai un grand vœu à faire, c'est celui de redoubler d'efforts en travaillant à éliminer ces embûches. Le respect des intervenants à tous les niveaux est essentiel pour y arriver et c'est à quoi il faut travailler pour que nous puissions en tant qu'acériculteurs, transformateurs et commercialisateurs continuer à développer notre merveilleuse industrie.

Luc Lussier, Président



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IMSI NEWS

by Larry Myott,
Executive Secretary

IMSI Continues Its Work on Pure Maple Syrup

At a recent meeting of the IMSI board in Plattsburgh, NY they reaffirmed their commitment to pure maple syrup marketing. In discussions of their work randomly testing samples from around the world. The board was pleased to learn that the IMSI has been working with state and provincial entities to detect product that is either adulterated or changed substantially. The states of New Hampshire and Vermont have been recently working with the IMSI in product testing. Several samples from around the world have recently been tested and found to be pure.

Annual Meeting in Nova Scotia

Executive Secretary Larry Myott of Vermont will be hosting a charter bus trip to the annual meeting in Truro, Nova Scotia, October 22 - 25. Details are being developed, but seats will be available soon. If you have not traveled on the "Vermont Bus" in the past and would like to get on the list to be notified, contact Larry at the address or email at the end of this article. The luxury coach will be departing from the Burlington, VT area and traveling up Route 2 across New Hampshire and Maine, stops to pick up folks will be made. The trip includes two days of travel to the conference and two days on the way home.

The joint annual meeting of the

IMSI and the North American Maple Syrup Council are a great opportunity to learn about the international industry and meet the people involved. It is a professional improvement conference for sugarmakers with a large trade show, banquets, tours and more.

IMSI Website Up and Running

internationalmaplesyrupinstitute.com is ready to go and includes a lot of valuable maple information. Check it out, look at all the links to other maple websites, states, provinces and government agencies as well. It is a gateway to the industry on an international scale.

2003 Maple Crop

As soon as the information becomes available, in June, we'll post the production information for the U.S. and Canada on the IMSI website. We all know what happened, how close are our estimates? Every year we get many requests for information on annual production in both the U.S. and Canada.

For Canadian production information, go to: http://www.statcan.ca/english/freepub/23_221_XIB/free.htm, For U.S. production information, visit the USDA's National Agricultural Statistics Service web site at: <http://www.usda.gov/nass/>

(For information on the IMSI, call or write Larry Myott, IMSI Executive Secretary, 5014 Route Seven, Ferrisburgh, VT 05456. Email: Larry.Myott@uvm.edu The IMSI web site is up and running: internationalmaplesyrupinstitute.com, check us out.)

NEWS FROM CONNECTICUT

By John H. Trumbull

The annual pre-season workshop of the MSPAC was held at Northwest Park in Windsor, CT on January 18, 2003. One hundred and twenty members of the Association enjoyed a long morning program and short business meeting.

Equipment dealers were set up around the meeting hall, coffee and donuts greeted everyone and copies of the new Connecticut Maple Syrup Producers Manual were distributed to everyone as they registered.

Kathy Hopkins, University of Maine, was the first speaker of the day. Her presentation on "Quality Control in Maple Syrup Production" was well received. The presentation featured "power point" video aids and went about an hour and a half. There were many questions answered during and after the presentation. Russ Davenport of Sugarhill Containers presented the second session with a discussion of "Care, Packaging and Labeling of Maple Syrup for Your Market." There were questions and discussion following the presentation.

The Association members voted to have the Board of Directors send a letter of support to the State Legislature for the Department of Agriculture. Budget cuts threaten their department and the maple industry. Connecticut has always had assistance from this department. It is important to keep the

Department of Agriculture in the state.

The annual summer picnic will be July 27th and be a combined picnic with the Massachusetts producers. This picnic will be at the Heath, MA fair grounds. This will be a great opportunity to talk to other producers and trade stories of the past season. The date for the annual meeting of the Connecticut Association was set for November 15, 2003, time & place to be announced.

Lastly a raffle was held with donated items from the Association, Rob Lamothe, Rich Norman, Mike Girard and Don Bureau. The meeting adjourned at 1:30 pm.

A quick look at the season in Connecticut shows most production ending by March 24th or so. The extremely cold weather and then high temperatures made the season very short. Production looks like it may be half the normal crop for much of the state. Mother Nature was not cooperative this year.

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NEWS FROM NOVA SCOTIA

North American Maple Syrup Council & International Maple Syrup Institute 2003 Annual Meetings

Howard Johnson Motor Hotel
Truro, Nova Scotia
October 22-25 2003

The 2003 maple season is just about over here in Nova Scotia. Most reports indicate a fairly positive season for our local producers. We hope that the season has been a good one for all producers but we know that mother nature can be very fickle.

Our thoughts now turn to the forthcoming annual meeting here in beautiful Nova Scotia. The Planning committee has been very active and the final details of the meetings are in process.

We have planned a very active and entertaining program and look forward to welcoming all of our maple producer friends, both old and new to enjoy a great meeting.

This year we are giving some additional emphasis to the technical part of the program. This is being organized by Dave Chapeski, the Maple Specialist for the Ontario Ministry of Agriculture. Several topics of current interest to the maple producing industry will be covered as well as the results of some of the current research programs. There will also be many displays by the equipment producers and suppliers.

The registration kits are ready for distribution to all who wish to receive them. Contact us at any one of the following addresses:

Doug Kirby
60 Roosevelt Avenue
Truro, NS B2N 1B6
Telephone: 902-895-4869
Email: dhkirby@ns.sympatico.ca
or

Jean Bentley
12 Valley Road
Westchester, NS B0M 2A0
Telephone: 902-548-2973
Email: jbentley@ns.sympatico.ca

The registration forms and information will also be available on the Nova Scotia Maple Producers web sit www.novascotiamplesyrup.com

Any of the above sources will give you the details of the time and place, etc. for the meetings. Bring your smile and best maple syrup and be prepared for a great meeting in Canada's Ocean Playground. All registrations received by September 1st. will receive by mail a copy of the Doers and Dreamers Guide prepared by the Province of Nova Scotia. This guide will help in planning your trip and stay in our beautiful seaside province.

Avard Bentley & Doug Kirby
Co-chairs 2003 NAMSC/IMSI
Meeting Committee

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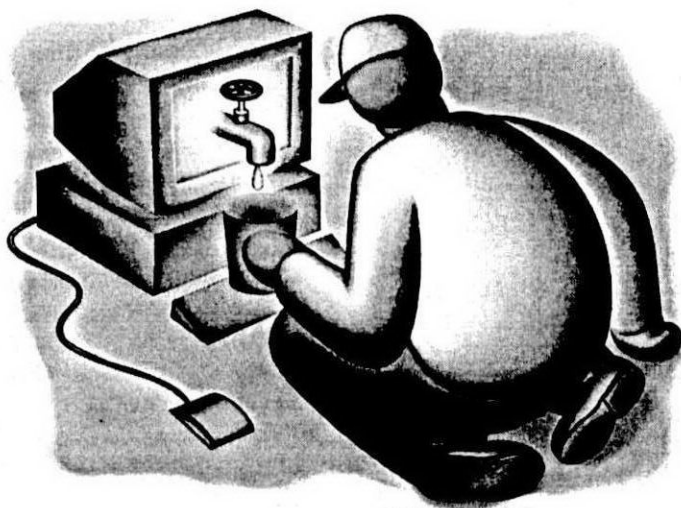
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Two Pipe Sap Ladder - A Promising Alternative

By Dave Chapeskie, R.P.F., Agroforestry Specialist
Kemptville, Ontario, Canada

BACKGROUND INFORMATION

The sap ladder technique of lifting sap has recently become a popular topic for many maple producers. A sap ladder is a simple, relatively inexpensive tubing system that lifts sap to a higher level of mainline without a significant loss of vacuum. The only requirement is that the tubing be on a vacuum system.

A sap ladder may allow vacuum to be introduced into portions of a bush where it would otherwise be ineffective or too costly. In some locations the need for additional pumping stations may be eliminated and remote areas may be accessed that were previously untapped. A sap ladder may also improve the effectiveness of tubing installations in areas where

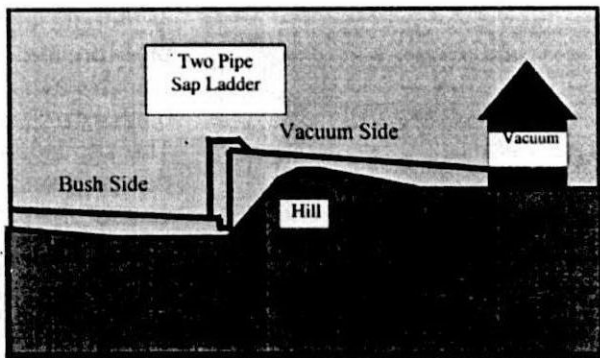


Diagram of 2 Pipe Sap Ladder Mainline Set Up

the bush is very flat or sloped slightly upwards towards the sugar camp.

The idea of the sap ladder has been around for a number of years with maple producers experimenting with various types of sap ladders in their own sugar bushes. A small-scale research project was initiated in Ontario in the spring of 2002 to learn more about the effectiveness of different types of sap ladders. This research will continue in the 2003 maple season. Data is collected during the maple season so that results will represent the functioning of the sap ladders in relation to true sap flow. The sap ladders tested in the research experiment were as follows:

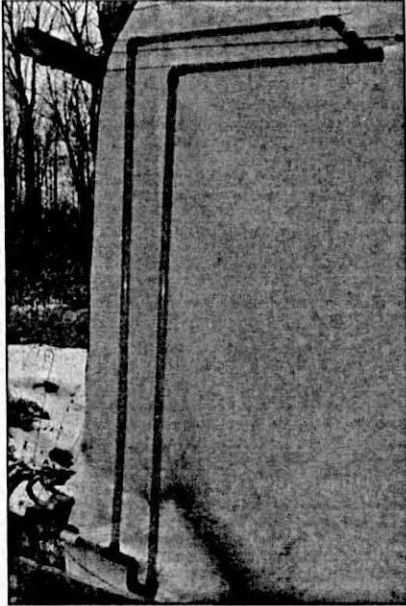
1. Star Ladder - series of 6 way star manifolds with 5/16" lines for a vertical lift
2. Two Pipe - two lines, 1 1/4" in this experiment with a trap at bottom, as a vertical lift
3. Diffuser - single vertical piece of mainline with a smaller diameter line within (to separate air and sap) as a vertical lift
4. Booster - booster tank at lowest point, with two vertical pieces of mainline, one for sap and one for vacuum (basically type #2 but with a booster) for a vertical lift

These lifts were 8 feet high on a 1 1/4" mainline with approximately 1000 taps. Observations from the first year of the study indicated that the second option, the two pipe sap ladder, may have the most potential as an effective means of

lifting sap. The two pipe sap ladder will be discussed more fully in this information note.

STRUCTURE AND FUNCTION

A two pipe sap ladder consists of a structure of two vertical pipes connecting the lower and upper sections of mainline.



Two Pipe Sap Ladder

Preliminary observations on the functioning of the two pipe sap ladder, as seen in Figure 2, were made from the research in Ontario in 2002. It was initially thought that the sap would lift in the pipe on the vacuum side and that air would travel through the pipe on the bush side. Results were not as expected. The sap ladder appears to function by a pumping action generated within the two vertical lines. The pipe on the vacuum side of the lift initially fills about two thirds full with sap. This sap then exhibits a continuous pumping action, vigorously pushing sap up the other line. As the sap in the line closest to the vacuum rapidly falls to within about a foot of the bottom, sap is simultaneously pushed up the other line without falling back or churning. This process occurs rapidly and continuously. The turbulence of the pumping

action of the sap was much greater than expected.

Transfer of vacuum appeared to be effective because there was no vacuum loss between the upper and lower ends of the lift. The sap ladder worked effectively with vacuum at 14" of mercury but 18-20" would probably be ideal. Further testing is needed to determine a range of effective vacuum levels.

The mainline and the ladder itself were made of 1 1/4" line in the Ontario research installation. The most effective line diameter for a two pipe installation will depend on the diameter of the mainline and on the quantity of sap that must be lifted. A lift made of 1 1/4" line may be effective for around 500 to 1000 taps but definite parameters have not been established.

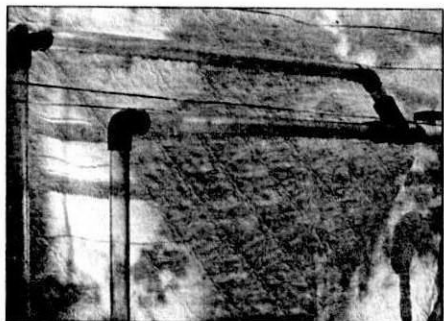
This sap ladder is unique in that it has a trap type bottom. It is not known if this design is necessary for the turbulence of action that was observed within the ladder. A two pipe sap ladder with a straight bottom will be included in research in the spring of 2003. It is not known what the height limit may be for this type of sap ladder. Further research is necessary to determine what height of a lift above 8 feet can be achieved effectively.

MATERIALS

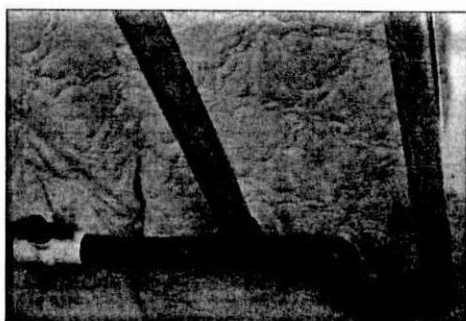
A variety of materials can be used to build a two pipe sap ladder as long as the basic structure is maintained. Clear PVC piping was used in the research experiment so that it was possible to visually monitor sap action within the ladder. The disadvantages of clear PVC piping is that it is more expensive and more likely to break if sap were to freeze within it than traditional polyethylene mainline tubing. An advantage of using clear or coloured PVC piping is that the elbows and Y connectors may be glued to the piping, allowing for simple assembly. Polyethylene mainline tubing may be used with polyethylene or stainless steel connectors and hose clamps but the resulting structure may be less rigid.

For the two pipe installation (8 foot lift) used in the Ontario research installation the materials were as follows:

- 2 - hose clamps
- 23 feet of clear 1 1/4" PVC line
- 5 - 1 1/4" 90o elbow (PVC)
- 1 - 1 1/4" 45o elbow (PVC)
- 1 - 1 1/4" Tee (PVC)
- 2 - 1 1/4" adapter (poly)



Top Portion of Two Pipe Lift



Bottom Portion of Two Pipe Lift

A vacuum gauge may be included at each end of the sap ladder to monitor the effectiveness of vacuum transfer.

A valve at the bottom of the sap ladder would allow for the emptying of any remaining sap in the ladder, preventing possible breakage from sap freezing within. A vacuum valve would release sap in the absence of vacuum. The drawback of this type of valve is that sap will be lost at times when the sap is running but the vacuum is not on. Alternatively, a ball valve may be used which can be opened and closed as necessary.

RESEARCH

The research currently underway in Ontario is supported by the Ontario Ministry of Agriculture and Food (OMAF), the North America Maple Syrup Council (NAMSC), the Ontario Maple Syrup Producers Association (OMSPA), and Wheelers Maple Products.

The sap ladder research will continue in the 2003 maple season with

increased emphasis placed on the two pipe sap ladder. Follow up will be carried out to determine specific mechanics and limitations.

MORE INFORMATION

For more information on sap ladders or to contribute information from your own experiences, please contact:

Ontario Ministry of Agriculture and Food — Dave Chapeskie, R.P.F., Agroforestry Specialist, ORC Building, P.O. Box 2004, Kemptville, Ontario, Canada K0G 1J0, Tel: (613) 258-8302, Fax: (613) 258-8392, E-mail: dave.chapeskie@omaf.gov.on.ca



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HALL OF FAME REPORT

The opening of the American Maple Museum was May 17th in Crogan, New York.

This year Roy Hutchinson of New Hampshire and George Fogle of Michigan were the inductees.

ROY HUTCHINSON

Roy Hutchinson of Canterbury, NH has been involved in maple since 1959. He joined the NH maple producers in 1960. He is a past president, past treasurer and served as a director for over 20 years in the NH Association.

In the early 70's Roy started helping out in the maple booth at the Big E. In the mid 70's he became manager of the booth for a number of years.

For the past 40 years Roy has been involved in a number of promotional projects for the association.

In 1999 Roy and several helpers built a 20' x 24' post and beam sugarhouse from lumber off his land, had it milled and assembled the sugarhouse on his front lawn. Then disassembled it and assembled it on the Mall in Washington, DC as part of the *Annual Smithsonian Folklife Festival*. The sugarhouse is now a permanent fixture at the Hopkington State Fair.

In 1987 he became the delegate to the North American Maple Syrup Council and in 1990 he became editor of the Maple Syrup Digest where he still serves.

GEORGE FOGLE

George Fogle has been involved in maple sugaring since moving with his family to the home farm in Mason, Michigan in 1929 at the age of five. George has farmed his entire life there and over the years, the farm has evolved from a traditional general farm with a variety of livestock and crops to a specialized dairy operation milking 115 cows. The two constants in all that time have been dairy and maple syrup.

In 1976, George and his wife Helen purchased Sugar Bush Supplies Co., a maple equipment and supply business founded in 1934, and moved the business to its current location on their dairy farm in Mason, MI. George, Helen and son Rick continued to grow and expand the supply business. Today, they maintain a large walk-in and mail-order business and have expanded into wholesale and retail maple syrup sales.

With the purchase of Sugar Bush Supplies co. came stock in Leader Evaporator Company of St. Albans, VT. In 1979, George was elected to serve on the Leader Board of Directors, a position he maintained until he stepped down in 1998, having served the last 14 years as Chairman of the Board. During his tenure on the Board, Leader Evaporator experienced substantial growth and George was involved in the purchase of Lamb Tubing and the G.H. Grimm Co. In his last years, he helped steer the company through expansion into high-tech welding equipment.

George has been a supporter of the Michigan Maple Syrup

Association from its inception in the early 1960s and in 2000 was honored, along with Helen, with a lifetime membership to the MMSA for his long-time contributions to the industry. He and Helen regularly attend the NAMSC annual meeting and their sugarbush and supply store were included in the 1996 NAMSC tour.

George treasures the hundreds of acquaintances and friendships he

has formed over a lifetime in the maple fraternity, not only in Michigan, but also stretching from Eastern Canada to Minnesota and Iowa in the west.

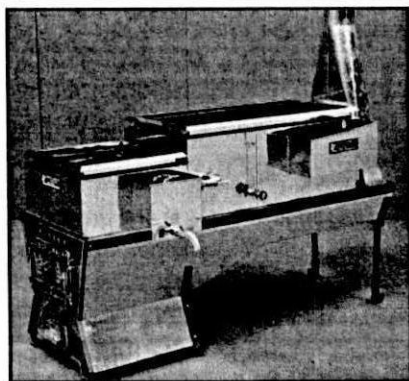
Over the years, George has been more than a producer and supplier; he has been an educator, colleague, and friend to all those interested in continuing the traditions of sugaring.

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NEWS FROM THE PA MAPLE SYRUP COUNCIL

By *Burton Kimball*

The PA Farm Show was held January 11-18, 2003 in Harrisburg. The Farm Show is the largest farm complex under roof (23 acres) in the United States. You do not have to step a foot out-of-doors to enjoy the complete facility.

The five State Maple Syrup Associations come together to man the State Maple Syrup Booth in the PA Food Court. The booth starts getting ready for business at 7:30 am and closes at 9:00 pm, with clean-up taking place after the closing.

Maple syrup (all A grades) samples are given to anyone wishing a taste. Samples are a great tool, as thousands of people attend who have never tasted pure maple syrup and products.

Maple syrup, cream, candy, sugar, maple coated nuts, maple soft serve, maple syrup sundaes and maple cotton candy are offered; thousands of dollars of products are sold in the food court along with hundreds of dollars in additional sales and free samples are available in the PA Market Place. A daily "Meet the Maple Syrup Producer" an educational program is presented on the stage of the PA Food Pantry.

PA Farm Show maple syrup competition winners were:

Best syrup of the show and premier producer of PA - Jim & Dora Tice

1st Place • 1/2 gallon light amber -

Jack Flaherty; **1st Place** • 1 quart light amber - Jim & Dora Tice; **1st Place** • 1/2 pint to less than quart light amber - Jim & Dora Tice; **1st Place** • 1 quart medium amber - Larry Hamilton; **1st Place** • 1 quart dark amber - Larry Hamilton; **1st Place** • Sugar cakes (candy) 1/2 lb. - J-D Farms; **1st Place** • Sugar cakes (candy) crystal coated 1/2 lb. - Deets Sugar House; **1st Place** • Sugar Crumb 1/2 lb. - Charles Nelson; **1st Place** • Soft Sugar (maple cream) 1/2 lb. - Charles Nelson; **1st Place** • Association Educational Exhibit - Northwest PA Maple Syrup Association.

The maple syrup industry is not even scratching the market that is out there to be taken advantage of.

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RESEARCH FUND



Guidelines for Submitting Research Proposals

Research Proposals will be received and considered for funding by the North American Maple Syrup Council in accordance with the following guidelines:

1. Proposals must be received no later than July 1st to be considered for funding by the Directors of the North American Maple Syrup Council at their October Annual Meeting.
2. Proposals shall be complete and detailed in content. It is suggested that each research proposal include the following information:
 - Name, Type, Purpose and Intent of proposed research
 - Name and address of submitting entity, contact person, phone, fax numbers, email / website address.
 - Location where research will take place
 - Duration / Schedule / Phasing of research project
 - Anticipated benefit of proposed research to the maple industry
 - Listing of similar or duplicating research in progress or previously completed and why proposed research is warranted.
 - The amount of funding being requested with a detailed cost breakdown specific to the amount of funding being requested.
3. A condensed version (executive summary) of the research report must be provided as part of the proposal.
4. Results or progress report of funded research projects must be presented annually at the NAMSC annual meeting and submitted for publication to the Maple Syrup Digest upon completion.
5. Forty - (40) complete copies of the proposals shall be submitted to the NAMSC Research Fund Chairman Richard P. Norman at the address listed below.

Please note that these are guidelines and subject to the terms and conditions contained in the *General Agreement*, required to be completed prior to payment of any approved funding. A copy of the Agreement is available upon request.

For more information please contact:

Richard P. Norman, Chairman, 387 County Road, Woodstock, CT 06281-2112

Phone 860 974-1235, Email: r.norman@snet.net

Michael A. Girard, Treasurer, 352 Firetown Road, Simsbury, CT 06070-1238

Phone 860 658-5790, Email: mgirard@simscroft.com

The NAMSC-Research Fund is a non-profit, volunteer managed committee of the North American Maple Syrup Council, Inc. (6-03)

BLENDING SYRUP - PART I

BLENDING OFF-DENSITY SYRUP WITH OTHER SYRUP TO ADJUST THE DENSITY - DETERMINING HOW MUCH I NEED

*Dr. Randy Heiligmann
School of Natural Resources,
The Ohio State University*

No matter how good we are at finishing syrup, most of us occasionally produce syrup with an unacceptable density. Maple syrup with too low a density is not legal, will spoil more quickly, and is thin and runny. Syrup that is too thick will produce sugar crystals and cost us money in syrup not made.

If the syrup's density is too low, it can be reprocessed to a higher density or blended with another syrup. If the density is too high, it can be blended with another syrup, water, or sap. The challenge when blending is to determine how much syrup, water, or sap to blend with the off-density syrup to produce the desired density.

Except for the most experienced among us, guessing the proportion of syrup, water, or sap to blend with off-density syrup can be a frustrating experience. The alternative is to calculate the proportions of syrups to blend to achieve the desired density. Certainly, those of us who are mathematically inclined can and some probably have used algebra to determine the proportions of two syrups to blend to achieve a desired density.

There is, however, a much easier

way. You can't completely get away from math and blend accurately, but the method of alligation discussed and demonstrated in this and a subsequent article requires very simple calculations. Those of you familiar with older editions of the Maple Syrup Manual may remember a discussion on blending syrup using the method of alligation (Pearson square). It is a quick and easy method for determining the proportion of syrup, sap, or water that should be blended with off-density syrup to achieve the desired density. Alligation can be used directly to determine the weights or volumes to mix when blending syrup with syrup or to determine the weights to mix when blending syrup with sap or water. It can be used with slight modification to determine the volumes to mix when blending syrup with sap or water.

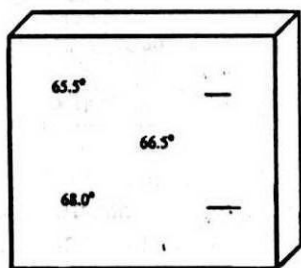
In this article, Part I of a two part series, we will demonstrate how to use alligation to determine weights or volumes to mix when combining two syrups to obtain a blend with the desired density. In Part II we'll demonstrate how to use alligation to determine the amount of sap or water to mix with off-density syrup to adjust its density to the desired level.

BLENDING SYRUP WITH SYRUP

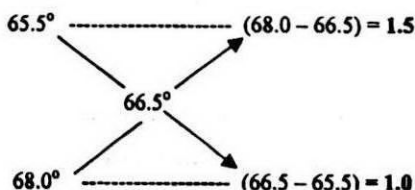
Determining the proportions of two syrups of known densities to mix to obtain a blend of a desired density can be done very simply, quickly, and directly using the method of alligation. The method is best explained by example, so let's blend two syrups with densities of 65.5° Brix and 68.0° Brix to obtain a blend with a density of 66.5° Brix. The method of

alligation determines the proportion by weight of each that should be blended.

Visualize the method utilizing a diagram similar to the five side of a die. In the upper and lower left-hand corners write the densities of the two syrups to be blended; in the center of the diagram write the density of the desired blend. In our example:



Subtracting across the two diagonals provides the proportion (by weight) of each syrup required to produce the desired density. Always subtract the smaller number from the larger, irrespective of its location. The proportion (by weight) of each syrup to be blended is the number located directly across from it in the diagram. In our example:

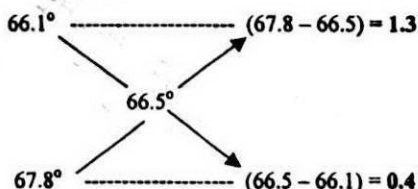


Blending 1.5 parts 65.5° Brix syrup with 1.0 part 68.0° Brix syrup results in a blend with a density of 66.5° Brix. If we had 150 pounds of 65.5° Brix syrup and wished to raise its density to 66.5° Brix by blending it with 68.0° Brix syrup, we would need to mix the 150 pounds of 65.5° Brix syrup with 100 pounds of the 68.0°

Brix syrup, producing 250 pounds of 66.5° Brix syrup.

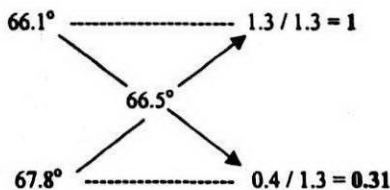
Above we noted that the method of alligation calculates the mixing proportions on a weight basis. However, since the difference in weight between syrups of different densities is relatively small, the proportions calculated using the method of alligation can be applied to volumes with relatively small error. In our example, applying the proportions to volumes and mixing one and one-half gallons of 65.5° Brix syrup with one gallon of 68.0° Brix syrup would produce 2.5 gallons of 66.52° Brix syrup - two hundredths of a Brix too high. This is far more accurate than most of us will ever measure.

Let's look at one more example of blending syrups with slightly messier results. Suppose we have some 66.1° Brix syrup we would like to blend up to 66.5° Brix using 67.8° Brix syrup. Using the method of alligation to determine the proportions to blend:



The mixing proportions are 1.3 parts 66.1° Brix syrup with 0.4 parts 67.8° Brix syrup. We can work with these proportions but it is easier to calculate the amount of syrup to combine with a given amount of off-density syrup if we convert one of the numbers in the ratio to a "one" so it can be interpreted as one pound or one gallon. In this example, since we want to know how much 67.8° Brix

syrup to add to a known amount of 66.1° Brix syrup, we can set the proportion of 66.1° Brix syrup to "one" by dividing both numbers by 1.3, resulting in a mixing ratio of 1 part 66.1° Brix syrup to 0.31 parts 67.8° syrup.



If we had 120 pounds of 66.1° Brix syrup we could combine it with 37.2 pounds of 67.8° Brix syrup (120 times 0.31) to produce 157.2 pounds of 66.5° Brix syrup. Similarly, 3 gallons of 66.1° Brix syrup could be combined with 0.93 gallons (or 119 fluid ounces) of 67.8° Brix syrup to produce 3.93 gallons of 66.5° Brix syrup.

SUMMARY

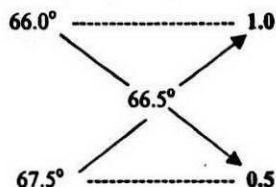
What You Really Need To Know

The method of alligation provides a quick, easy, and accurate way to determine the proportion by weight or volume of two syrups to blend together to obtain a blend of the desired density. To determine the proportions:

- Utilize a diagram resembling the five side of a die.
- Place the density of the two syrups to be blended in the upper and lower left-hand corners of the diagram and the desired density of the blend in the center.
- Subtract across the diagonals to obtain the proportions of syrup to mix. Always subtract the larger num-

ber from the smaller. The proportion of each syrup to blend is directly across from it in the diagram.

As a final example we can determine how much 67.5° Brix syrup should be mixed with 10 gallons or 110.4 pounds of 66.0° Brix syrup to raise its density to 66.5° Brix.



Five gallons of 67.5° Brix syrup should be mixed with 10 gallons of 66.0° Brix syrup to produce 15 gallons of 66.5° Brix syrup, or 55.2 pounds of 67.5° Brix syrup should be mixed with 110.4 pounds of 66.0° Brix syrup to produce 165.6 pounds of 66.5° Brix syrup.

In the next issue of the Maple Syrup Digest we'll look at using the method of alligation to determine the amount of water or sap to mix with a known quantity of syrup that is too heavy.



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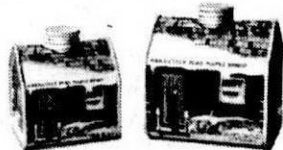
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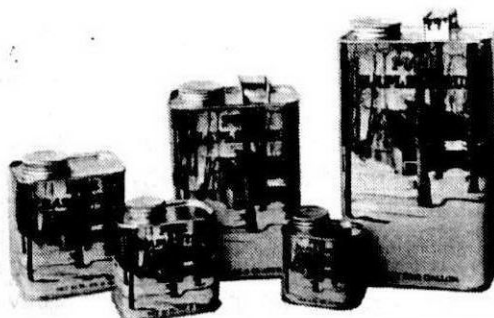
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MAINLEY MAPLE

By Al Bolduc

After a long silence, Mainely Maple is back in business. A lot has happened since we last appeared in print: the Maine Department of Agriculture awarded MMPA a \$21,000 Agricultural Advancement grant to help promote maple syrup; MMPA bylaws have been amended to allow subchapters; Kathy Hopkins, Extension Service maple specialist, staged the third annual Fall Maple Day; Southern Maine Maple Producers Association (SMMPA) was formed; MSCSA organized a tour of northern Somerset County sugar bushes as a sequel to the International Maple meeting in North Conway, New Hampshire.

The Agricultural Advancement grant was awarded last year. A committee consisting of Eric Ellis (chair), Bob Smith, John Hodgkins, Al Bolduc, Jeremy Steeves, Kathy Hopkins, and Deanne Herman from the Maine Department of Agriculture met regularly with Burgess Advertising Agency of Portland. Together, they allocated a portion of the grant to educating producers and improving communication among them by means of a quality news letter, educational seminars, and a quality control manual. A larger portion went to improving marketing techniques. The PBS Jim Crocker Cooking Show (The Maine Dish) - which aired the week before Maple Sunday - was the first effort. The show was entertaining and the food (scallops wrapped in bacon and

drenched in maple syrup, ribs barbecued in a maple sauce, and maple pie) was delicious. The following week, Eric Ellis was interviewed by Maine Public Radio. Not bad for openers! Eric mentioned the nervousness of the small producers in Central & Southern Maine, remained optimistic stating a few cold days could change their season around dramatically while the bulk syrup producers were reporting a good start in Northern Somerset County.

The MMPA held its annual meeting at the Augusta Civic Center in January. Bob Smith was re-elected President and Delegate to NAMSC; John Hodgkins - Vice President; Jeremy Steeves - Sec./Treas. and alternative Delegate to NAMSC; Al Bolduc - Director and Delegate to IMSI; Eric Ellis - Director. The major achievement of the meeting was the passage of an amendment to the bylaws allowing sub-chapters to MMPA. This reorganization will provide an accurate census (important when applying for grants) and will facilitate communication between MSCSA and the newly formed, very active Southern Maine Maple Producers Association (SMMPA) and MMPA the parent organization.

SMMPA held its first formal meeting at Ashley Gerry's sugar camp in Newfield on a cold, very rainy day last December. The turn out was impressive! As was the enthusiasm and energy! Lyle Merryfield and Ben McKinney are president and vice president. A business meeting was followed by Al Bolduc's presentation on the transition from bucket to main line and tubing which ended with a sortie into the woods to inspect

Ashley's lines despite the pouring rain. Keep your eye on this organization. It's out to pull the small producers into an articulate, effective group. I have no doubt it will succeed.

The third annual Fall Maple Day was held at the Skowhegan Community Building. Kathy Hopkins (Maine's maple specialist) gave a talk on safety in the maple business which was followed by a discussion of the pros and cons of LLC's by an extension agent from Cumberland County. There were two presentations in the afternoon: one by Rodney Hall on filters and filter presses; and one by Jeremy Steeves on tubing installation. These were followed by a tour of Jeremy's sugar house and/or a trip to Mrs. Stoutameyer's retail store in Madison.

The "Tour After the Tour" orchestrated by a committee consisting of Al Bolduc, Bob Smith, Henri Poulin, Daniel Boucher, Danielle & Guy Rodrigue, & Guy LaBonte was a smashing success. A good time was had by all viewing many sugaring operations & enjoying the maple camaraderie. Immediately after the International Maple meeting in North Conway last October two tour buses set out for Skowhegan and thence to Jackman. They stopped at Claude Roderigue's recently built sugar house with its state of the art maple equipment. The managing forester there (Bill Jarvis) gave them a landowners perspective on maple leasing. The next stop was the Pittston Farm in northern Somerset County - thirty miles from the nearest blacktop. This was base camp for the next three days. Each day they

toured 5 to 7 sugar bushes (which ranged from 25,000 to 100,000 taps) in small groups, lunching at one or another of them. They saw sap ladders and 100 hp vacuum pumps; there were demonstrations of tubing tools new to most; they saw moose and deer; one night it snowed 8 inches. Truly a northwoods experience as well as an education in large scale maple production.

So much for what has gone before. Now we're in the midst of the main event. Maple season is upon us and producers are bending every effort to make it a good one. Some areas are going great guns - the sap is flowing and production is up. Others aren't so fortunate. The weather went from bitterly cold to consistently mild - not a propitious state of affairs. But the weatherman is talking about a cold front and things may change. Tomorrow is another day.

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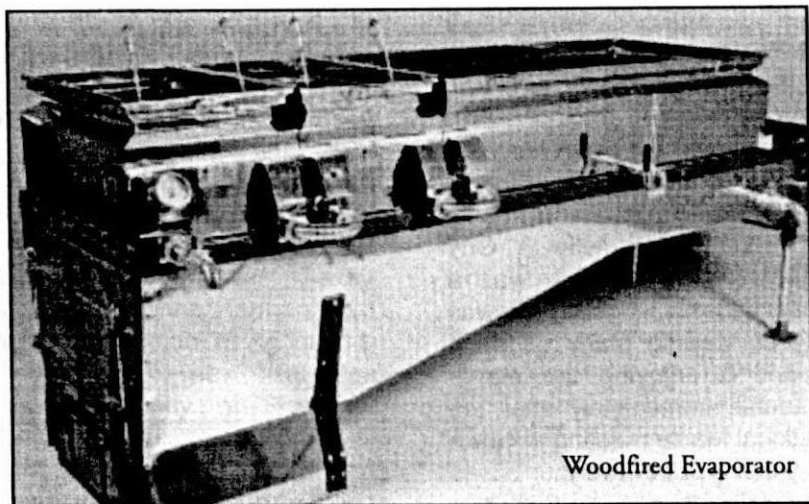
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NEWS FROM MICHIGAN

By Cathi Bates

The Michigan Maple Syrup Association held their annual meeting January 18, 2003 in Clare, Michigan. The special guest speaker was George Cook of the University of Vermont Extension. He began his program by showing the video that summarized the NAMSC/IMSI meeting last October. Then he presented his program on "Safety Concerns in Your Maple Sugaring Operation." A maple syrup, cream and candy contest was conducted. A brand new web-site was introduced, it is www.mi-maplesyrup.com. Honorary membership was awarded to Mary and Bob Gibbs for their many years of service as "friends of maple." Afternoon interest sessions included a Beginners Session, Tips on Marketing and Promotion; Sugarbush Management; Maple Syrup Quality Control; Making Candy and Cream; Current Forest Health (Pest) Issues; and Limited Liability Corp. (LLC). New officers were elected at the Board meeting; Jean Maday, President, Craig Arnold, Vice-President, Tim Boonstra as Secretary and Steve Youdes as Treasurer.

The Michigan Association also sponsors a fall tour. This meeting rotates around the state which gives sugarmakers a chance to visit other producers. On September 27 and 28th the western part of the Upper Peninsula will be toured.

This years maple production in the lower part of the state was unfortunate as less than 1/2 a crop was pro-

duced, and very little light syrup was made. Many sections in the Northern part of the lower peninsula had a good to very good season and to date, the Upper Peninsula is having a good year. The lower part of the State had warm weather and very few freezing nights. The runs were so small that many producers had trouble with not enough sap to fire the evaporators. The hobbyists and small producers were the fortunate ones.

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EXCESS MANGANESE REDUCES CHLOROPHYLL IN SUGAR MAPLE LEAVES

By
Samuel St. Clair,
William E. Sharpe
and Jonathan Lynch

This research was partially funded by a grant from the North American Maple Syrup Council.

INTRODUCTION

In the northeast United States, significant declines in forest health have been observed over the past several

decades. Economically valuable species such as sugar maples are in many places being replaced by much less valuable, but more resilient tree species such as striped maple. Several factors have been linked to decline symptoms, but soil acidification and the disruption of nutrient cycles appears to be a central factor that weakens sugar maple resistance to both nonbiological and biological stresses. The majority of research on this topic has focused on aluminum toxicity to roots and foliar calcium and magnesium deficiencies. Manganese (Mn) toxicity is another important, but less well understood component of soil acidification.

Mn availability to plants increases as soils acidify below pH 5.5

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Kogelmann and Sharpe (1999) reported a five-fold increase in the Mn concentrations of sugar maple leaves growing on extremely acid vs. moderately acid soils in northern Pennsylvania. Sap Mn concentration differences between sugar maple on these sites were even greater with differences up to 10 times as great on the extremely acid site. Mn uptake by sugar maple increases as acidic soils produce Mn to a more available form. Soil acidification also increases calcium (Ca) and magnesium (Mg) cation leaching thus making it easier for Mn to bind to root surfaces. The result is nutrient imbalances, which likely impair leaf function.

Little is known about how excessive Mn affects sugar maple health. The published range of Mn in leaves of

healthy sugar maple trees is 632-1630 ppm (parts per million) (Kolb and McCormick, 1993). However, on the Allegheny Plateau where declines in sugar maple have occurred in the last two decades, leaf Mn concentrations averaged 3100 ppm (Drohan et al., 2002). This is much higher than the toxicity threshold of most crop species, and higher than the previously published maximum.

In crop plants, excessive leaf Mn is known to decrease leaf chlorophyll content, resulting in premature leaf yellowing, a symptom of health decline in sugar maple stands of the eastern deciduous forest. The objective of this study was to examine leaf chlorophyll responses of sugar maple seedlings exposed to excess Mn.

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METHODS

Second year bare-root seedlings of sugar maple (*Acer saccharum*) grown from seed were studied. Six seedlings were cultivated in one of four, 100-liter hydroponic tanks filled with nutrient solution. Each tank had one of four Mn concentrations from adequate to excessive: 5uM (microMolar), 125uM, 250uM and 500uM. The solution was aerated continuously and changed every seven days. The experiment was performed in a greenhouse on the Penn State campus from August 1st to September 1st, 2001. At the end of the experiment, chlorophyll was extracted from disks punched from the tip and side of leaves.

chlorophyll concentration in a dose dependent manner. The 125, 250 and 500 uM Mn treatments decreased leaf chlorophyll content by 10%, 20% and 35% relative to the adequate (5 uM) Mn treatment. It is possible that this response was the result of Mn preventing uptake of Mg and iron (Fe) at the root surface. Excess manganese can also interfere with magnesium and iron nutrition in the leaf. Adequate concentrations of these nutrients are important for the production of chlorophyll. Low foliar Mg/Mn and Fe/Mn ratios may be a particularly good indicator of susceptibility to leaf yellowing. The 20% and 35% reductions in leaf chlorophyll observed in this study were occurring at leaf Mn concentrations of 2300 and 4900 ppm, Mg/Mn ratios below 1 and 0.5 and Fe/Mn ratios below 0.1.

RESULTS AND DISCUSSION

Excess manganese reduced



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Reduction in chlorophyll significantly decreases the photosynthetic capacity of leaves, as it is the primary pigment involved in harvesting light energy for photosynthesis. Tree health and vitality are dependent upon optimal levels of photosynthesis. As sugar is the direct product of photosynthesis, factors that interfere with this process may also decrease sap quantity and quality. These results are preliminary and additional research is underway. Other factors that may act together with manganese toxicity to reduce sugar maple health are being studied. These include light intensity, ozone, and ultraviolet radiation.

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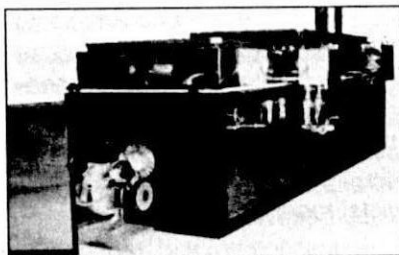
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NEW YORK SUMMER MAPLE TOUR COMES TO MOHAWK VALLEY

In July, hundreds of maple enthusiasts throughout New York and New England will crisscross the Mohawk Valley as central New York plays host to the 2003 NYS Maple Producers Summer tour. Far removed from their late-winter sap operations, the summer tour gives producers a chance to relax and tour other maple operations and facilities. The two-and-a-half day event is scheduled for July 17, 18, and 19 and will highlight eight local maple producers.

Hosted for the first time by the Mohawk Valley Maple Producers and the Vernon-Verona Sherrill (V.V.S.) FFA, the event showcases techniques and trends of the maple industry. Headquartered at the V.V.S. High School, the tour kicks off with an industry trade show and social mixer on Thursday evening. Thursday's activities also include a tour of the V.V.S. FFA maple retail outlet and processing facility including a wagon ride to the school's sugarbush woodlot. A guided walking tour in the sugarbush will feature a live demonstration of a state-of-the-art tubing and vacuum sap collection system.

Riding in the comforts of charter busses, maple tourists head Southeast on Friday morning touring four Madison County maple operations. On the outskirts of the village of Morrisville, two tour stops include a visit to Maple-Bush Farm, owned by Michael and Stephanie Battisti,

and Loomis Maple Homestead. Recognized as producers of award winning maple syrup and sugar, Battisti's operation utilized a remote tank and sap releaser that periodically draws sap uphill to the sugarhouse. A short trip across town, Loomis Maple Homestead maple operates a roadside self-serve and newly constructed saphouse. Plans include the design and layout of a suspended tubing system that spans the valley behind the saphouse.

Hosting pancake breakfasts every weekend in March, Ben and Judy's Sugarhouse of West Edmenston highlights value-added maple products such as maple gift baskets and displays of maple novelties. Emphasizing marketing and the image of maple, this maple operation creates a warm family atmosphere by catering to visitors. Along with eating fresh pancakes, guests can view the entire maple process including the Model A Ford "delivery truck." In addition to the sugarhouse, a live tubing washing demonstration will be given on the 2-year-old, 2500 tap, wet/dry vacuum tubing system. The other Friday stop is at the student-operated Stockbridge Valley FFA, located in Munnsville, NY. This operation features a Steam Away maple evaporator housed in a modern facility.

On Saturday, we head Northwest stopping at Tree-Bee Farm in Lowell, Link Maple Farm in Blossville, and Riverdale Farm in Camden. Tree Bee Farm, processors of maple and honey, utilizes hundreds of privately owned roadside trees in their syrup operation. Sap is processed using a reverse osmosis machine and waste-oil fired

arch. At Riverdale Farm, established 25 years ago, maple syrup and candy are produced in a small, family operation. Packing techniques and efficiencies will be emphasized.

The final stop Saturday will be at Link Maple Farm. Featured at the saphouse is a 40 by 12 wood fired, open syrup pan evaporator with a 700 gallon per hour SpringTech reverse osmosis and new Steam Away. A second stop in the Link sugarbush will feature an operating demonstration of a sap ladder on a wet/dry tubing system. The day will be capped off with a chicken barbecue luncheon.

In addition to the tours, North America's leading manufacturers and dealers of maple equipment and supplies will be exhibiting their goods at the tour's trade show. Sap evaporator manufacturers include Algier Evaporator Company, Dominion and Grimm, Darveau, Leader Evaporator Company, and Waterloo/Small U.S.A. Not only do these companies manufacture evaporator equipment, but also much of the equipment and supplies needed for any maple producer. Spouts, tubing, filter presses, bottling units, and stainless steel hoods, pans, canners, and evaporators, along with countless other supplies, will all be on display.

At Friday night's NYS Maple Producer Association Banquet, renowned maple expert Glen Goodrich will be sharing his maple wit and humor. New this year, top maple industry producers and promoters will be recognized from each region. Award applications are available from local association presidents.

The maple producers featured on

the tour are members of the Mohawk Valley Maple Trail and focus on the Utica-Rome consumer market of Central New York. The summer tour is open to the general public. Registration for the two-and-a-half day conference is \$88 per person and includes all six meals, Maple Producers banquet, trade show, travel, and tours. Pre-registration is required and due by June 20th. For more information or a registration packet, contact V.V.S. FFA advisor Keith Schiebel at (315) 829-2520 ext. 262, email at kschiebel@vvs-csd-high.moric.org.

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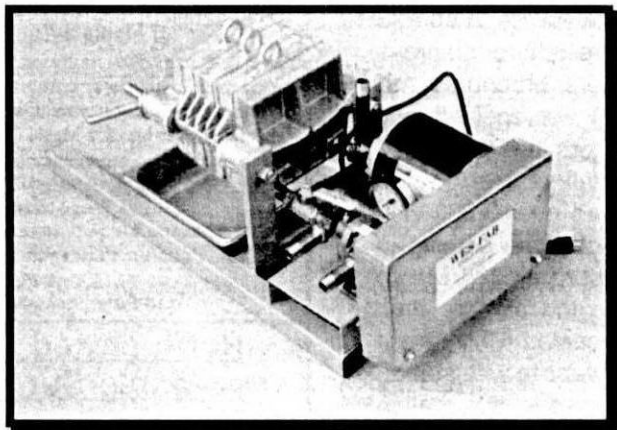
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WEBSITES WORK

By Barbara Mills Lassonde

If you've been debating whether to be listed on your association's website, or if your association does not yet have one, rest assured, a website has truly become an important promotional tool.

In early 2002, the New Hampshire Maple Producers Association opened a website which initially contained a limited amount of information: the home page, a list of sugar houses and a schedule of upcoming events. We hired someone to set up and maintain the website, and all information to appear on it was funneled through one contact person. Our website went on line during the sugaring season, and because it took awhile to spread the word of its address (through press releases, newsletters, brochures and our maple hot line), we received only a few hundred visitors that spring.

During the first full year of owning the website, we had over 3,200 visitors, the majority of those coming in during January, February and March of 2002. This was much more than our hot line ever received. Throughout that first year, the website was steadily improved. More pages, information and photos were added, and material was updated as changes occurred.

This past year, we received over 4,700 hits, with nearly 3,300 of them coming in during February and March of 2003. Website visitors can now download a membership form, order our cookbook or read our latest press release. They can read about the history of maple syrup and how it is

made and view our list of sugar houses or schedule of upcoming events. Any association members may be listed on this site at no cost to them, and links are included to their individual websites or e-mail addresses.

As you can see from these numbers, many more people are learning about New Hampshire maple with the addition of our website. And those maple producers who are listed on the site receive orders from people they never would have heard from otherwise. Websites are an important promotional medium that will remain with us for a long time to come.

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Phone: 902-895-4869 — Email: dhkirby@ns.sympatico.ca
Jean Bentley, 12 Valley Road, Westchester, NS, Canada B0M 2A0
Phone: 902-548-2973 — Email: jbentley@ns.sympatico.ca

CORRECTION

In the listing of the members of the "Hall of Fame" in the last issue, it should read *Erwin* Yancey, NY 1980 and not Edward Yancey.

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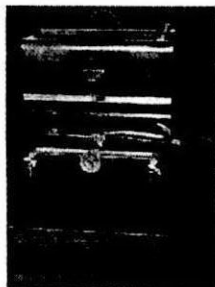


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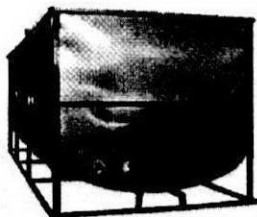
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