

# Maple Syrup Digest



VOL. 15A, NO. 3

OCTOBER 2003



PRESRT STD  
U.S. POSTAGE PAID  
CANTERBURY, NH  
PERMIT NO. 14

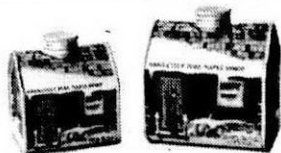
Return Service Requested

Maple Syrup Digest  
PO Box 240  
Canterbury, NH 03224

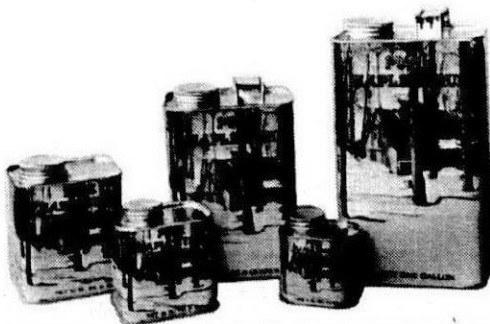
**New England Container Company**

# HOME OF THE FAMOUS CABIN CAN

- Low, Factory-Direct Prices
- Safe, Lead-Free Cans
- Popular & Convenient Sizes
- Tin Construction Protects Color, Flavor & Grade
- All Cans In Stock Year Round



**CABIN CANS AVAILABLE IN  
250 ML & 500 ML SIZES**



**GALLONS • HALF GALLONS • QUARTS • PINTS • HALF PINTS**



**All Containers  
are properly  
sized for Hot Pack maple  
syrup  
- NOT OVERSIZED!**

**75 Jonergin Drive • Swanton, VT 05488 • 802/868-3171**

---

# PRESSURE FILTER

From "Wes Fab"

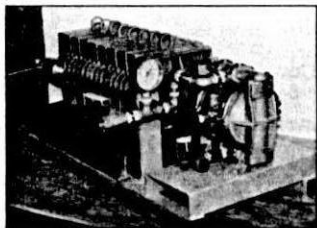
For the Hobby to Commercial Producer - Small to Large Capacity.



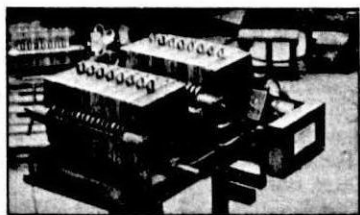
*Hand Pump Model*

7" Short Stack Filter Press Hand Pump or Electric. Hand Pump model has greater capacity than other hand pump filter presses. Uses standard 7" Filter Papers. Food grade pump. Electric Motor model is Designed to Expand by adding more Plates & Frames.

Reliable Electric Motor Driven pumps.  
7 Inch Press available with 3-8 Frames.  
10 Inch Press comes standard with 8 Frames.  
Highest capacity filter of this type.  
Fast Heating, Easy Cleaning.  
Compact, Lightweight.



*Optional Diaphragm Pump Show*



*Electric Gear Pump Model*

Double Bank Filter Press.  
For Continuous Production without shut-down.  
Same materials as our reliable filters above.  
Available with Optional Long Life Diaphragm Pump.

Contact Us for your Special Filtering Requirements  
or for the name of your local dealer

**WES FAB**

**Wayne "Wes" E. Schoepke, Jr.**

P.O. Box 95, Wausau, Wisconsin 54402-0095

(715) 241-0045

---

# MAPLE SYRUP DIGEST

Official publication of the  
NORTH AMERICAN  
MAPLE SYRUP COUNCIL

# DIRECTORY

Published and Edited by:

**ROY S. HUTCHINSON**

**P.O. BOX 240**

**CANTERBURY, NH 03224**

**Phone: 603-783-4468**

**Fax: 603-783-9953**

**Email: mapledigest@tds.net**

Published four times a year

(Feb., June, Oct., Dec.)

Postage paid at:

Canterbury, NH 03224

## FIELD EDITORS

**Conn.** . . . . John Trumbull—860-379-7312  
84 Maillet Lane, New Hartford, CT 06057

**Indiana** . . . Steve Deatline—765-874-2170  
7773 S 100 East, Lynn, IN 47355

**Maine** . . . . . Al Bolduc—207-265-2600  
1100 Middle Rd., New Portland, ME 04961

**Mass.** . . . . James Graves—413-625-9066  
R.D. 1, Shelburne Falls MA 01370

**Michigan** . . . . Cathi Bates—231-845-6902  
2800 N. Peterson Rd., Ludington, MI 49431

**Minnesota** . . . . Carl Vogt—612-425-3742  
10304 94th Ave. No. Maple Grove, MN 55369

**N.H.** . . . Barbara Lassonde—603-224-2452  
79 Fisherville Road, Concord, NH 03303

**N.S.** . . . . Maxwell Spicer—902-392-2823  
Spencers Island, NS, Canada B0M 1S0

**N.Y.** . . . Mrs. Marion Wells—518-766-2375  
550 Hoags Crs. Road, Nassau, NY 12123

**Ohio** . . . . . Tom Hoffman—330-659-3061  
P.O. Box 326, Bath, OH 44210

**Ontario** . . . . Bill Robinson—519-529-7857  
RR 2, Auburn, Ontario, Canada N0M 1E0

**Pennsylvania** . . . Jim Tice—570-549-5257  
427 Tice Road, Mainesburg, PA 16932

**Wisconsin** . . . Roland Jorns—920-868-3161  
4518 Highway T, Egg Harbor, WI 54209

## SUBSCRIPTION RATES

United States . . . . . 1 year — \$5.00

Canada, US funds: . . . . . 1 year — \$7.00

## NORTH AMERICAN MAPLE SYRUP COUNCIL DIRECTORY OF OFFICERS

**LUC LUSSIER, President**

2100 St. Laurent, Plessisville,

Quebec G6L 2Y8

**819-362-3241**

**ROGER SAGE, Vice-President**

4449 Sage Road

Warsaw, NY 14569

**585-786-5684**

**CARL VOGT, Secretary-Treasurer**

10304 94th Ave. No.,

Osseo, MN 55369

**763-425-7577**

## DIRECTORS

**Raymond Kasulaitis . . . . . 860-379-8787**

69 Goose Green Rd., Barkhamsted, CT 06063

**Dave Hamilton . . . . . 765-836-4432**

6025 N. 100 E., New Castle, IN 47362

**Robert S. Smith . . . . . 207-474-3380**

24 Bennett Ave., Skowhegan, ME 04976

**Tom McCrumm . . . . . 413-628-3268**

755 Watson-Spruce Cmr Rd., Ashfield MA 01330

**Jean Maday . . . . . 517-645-7305**

570E. Main, Box 245, Potterville, MI 48876

**Elizabeth Collins . . . . . 651-645-1598**

28956 State Hwy. 65, Penguilly, MN 56775

**David Briggs . . . . . 506-764-1913**

2979 Main St., Hillsborough, N.B. E4H 2X9

**Hank Peterson . . . . . 603-432-8427**

28 Peabody ROW, Londonderry, NH 03053

**Avard Bentley . . . . . 902-548-2973**

12 Valley Rd., Westchester, N.S. B0M 2A0

**William Brown . . . . . 740-694-5385**

7185 Quaker Rd., Fredericktown, OH 43019

**Bill Robinson . . . . . 519-529-7857**

RR2, South St., Auburn, Ont. N0M 1E0

**Burton Kimball . . . . . 814-739-2720**

9691 Kimball Rd., Wattsburg, PA 16442

**Douglas Rose . . . . . 802-228-4456**

Rte. 100 N, Box 820, Ludlow VT 05149

**Lyle Stockwell . . . . . 715-594-3632**

N 3870 730th St., Ellsworth, WI 54011

## DIGEST ADVERTISING RATES

2 Page Spread . . . . . \$450.00

Full Page . . . . . 240.00

1/2 Page Vert. or Horz. . . . . 135.00

Column Inch . . . . . 19.00

Classified . . . . . 70c per word

**COPY DEADLINE: First of the  
month preceding date of issue**

**COVER: Sugarhouse of Michael  
Battisti, Eaton, NY during an ice  
storm.**

# GREETINGS FROM YOUR PRESIDENT



Just getting back from the Labour Day weekend holiday and realizing that Summer is actually coming to a close and that our Annual congress is in just a few weeks away.

Evidently, the time has gone by so quickly and we find it difficult to get everything done in time. Nonetheless, we must not forget our annual event which will be taking place in Truro, Nova Scotia, from October 22nd till the 25th, 2003.

Not only is this a unique occasion to meet with our friends, but it also gives us a chance to take in the Autumn air in a magnificent region. It also gives us the chance to touch upon many points concerning our maple industry, many subjects that are very important to all of us.

Looking forward to meeting everyone in Truro.

## SALUTATIONS DE VOTRE PRÉSIDENT

À peine de retour du congé de la Fête du travail que l'on se dit que l'été se termine et que notre Congrès est dans quelques semaines.

En effet, le temps passe si rapidement que l'on a de la difficulté à tout faire à temps. Mais il ne faut pas manquer notre événement annuel qui aura lieu à Truro, Nouvelle-Écosse, du 22 au 25 octobre 2003.

En plus d'être une occasion

unique pour renouer nos amitiés et savourer l'automne dans une magnifique région, nous aurons l'occasion de faire le point concernant plusieurs sujets qui touchent de près notre industrie de l'érable.

Au plaisir de se rencontrer à Truro.

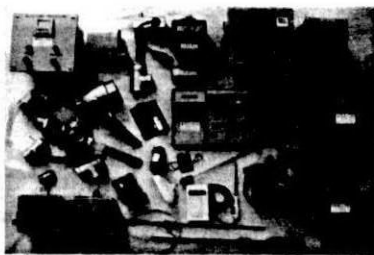
Luc Lussier  
President, NAMSC

## FROM THE EDITOR:

I would like to apologize to George Fogle for his name being left off the caption on page 4 of the June issue. It was on the original page but the printer left it off somehow. Sorry about that George.

Remember folks, we are always looking for pictures for the front cover, please don't be shy about sending us a picture of your sugarhouse.

Roy



Marcland USA, Inc. manufactures and supplies  
Controls and associated equipment  
For use in the production of Maple Syrup.

Automatic draw-off systems • Level control systems  
Stainless Steel ball valves and fittings  
Digital Thermometers • Barometers  
And other accessories

**MARCLAND**

220 River Road, Schroon Lake NY, 12870  
Tel: 1(616)632-7922 Fax: 1(616)632-7386  
email: marcland@bluemoo.net www.marcland-usa.com

## **D.G. U.S.A., Inc. Distribution Center**

DOMINION & GRIMM Maple Sugaring Equipment and Accessories

164 Yankee Park Road, Fairfax, VT 05454

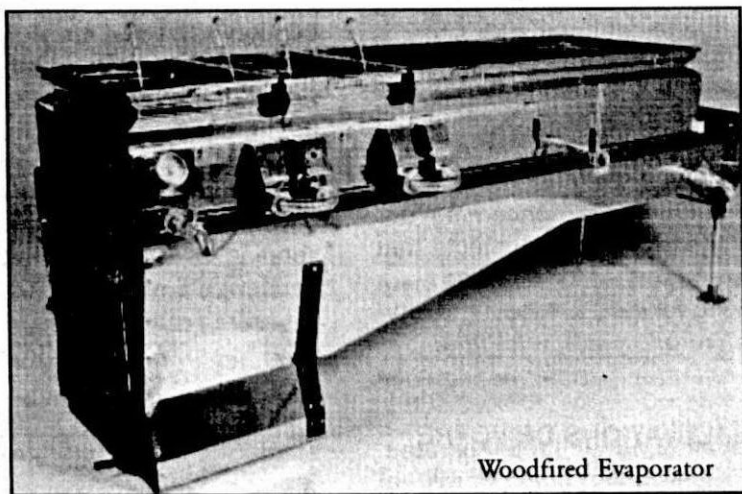
802/893 DGUS (3487) • Fax us at 802/524-9643

# **Boil with Dominion & Grimm USA**

STILL ACCEPTING ORDERS FOR 2004 MAPLE SEASON

SPEAK WITH A D.G. USA REP AT

PA MAPLE TOUR or NAMSC/IMSI MEETING



Woodfired Evaporator

Whatever you need for  
maple equipment or supplies,  
D & G USA Inc.

has the solution for you.

From questions regarding R.O. machines  
to proper sizing vacuum systems  
call D&G USA office

# IMSI NEWS

by Larry Myott,  
Executive Secretary

We are on our way to Nova Scotia for what is expected to be an excellent session. Many of us remember the last time we met in Nova Scotia and experiences that we had. Their host committee has been working hard for about two years and we look forward to the fruits of their labors.

The last quarterly meeting of the IMSI was held in Hawkesbury, Ontario with President Gerard Filion hosting the session. After the session we were able to visit his plastic bottle manufacturing facility to better understand the container business.

The IMSI board is working on several issues including the possibility of a standardized grading system for maple syrup. David Chapeskie of the Ontario Ministry of Food & Agriculture chairs the committee that has been gathering information for some time about grading systems, or perhaps the lack of grading systems. They will be reporting at the annual meeting.

Reports were heard from various government entities, including Vermont and Quebec. In Vermont the Agency of Agriculture has imposed a \$10,000 fine on one large packer for mis-labeling maple products. They have also removed a product from sale as it did not meet the density requirements for maple syrup. That product is being investigated by the US Food and Drug Administration.

Another issue being worked on by the board is the subject of organic certification of maple products. There are many agencies offering certification, from Europe to California and all

across Canada and the U.S. The IMSI board is very concerned about the lack of real guidelines for organic certification, they are currently reviewing standards being used. The objective of the board is to have a list of valid/approved certifying agencies on the IMSI website that will include their logo and requirements. It is the feeling of the board that certifying agencies must have an inspection requirement to be valid.

During the summer and early fall we have heard of a lot of great maple promotion out there, we need all we can get and we should be doing our best to make sure that we participate in that promotion. Fairs and other agricultural events are great places to promote or for the industry to develop funds for promotion. Each year I hear about another group of maple producers getting together to build a sugarhouse on their local fairgrounds. Promoting by sampling, selling and getting folks exposed to pure maple syrup and products works—but don't give it away. Giving away product is not the answer, get them to try it and then they'll buy it. Remember a rising tide floats all boats, so promotions in Toronto or Burlington, VT will help everyone.

Visit the International Maple Syrup Institute's web site: <http://www.internationalmaplesyrupinstitute.com>, email Larry Myott at: [Larry.Myott@uvm.edu](mailto:Larry.Myott@uvm.edu)

Larry can be reached at his office at the University of VT, however from December 1 on he will be available at his home office, 802-877-2250. Retirement from the University of Vt looms ahead, but involvement with the maple industry continues.

# MAINLY MAPLE

*By Alred Bolduc and Mary Butler*

Maine's maple season was a mixed bag. Southern Maine's was short, but sweet. The quality was high, but the quantity was disappointing. Sap didn't flow in central Maine till April thanks to frigid weather. But northern Maine had a banner year. Sap began to flow in mid March and kept right on till the first of May. Somerset County is the number one maple producing country in the United States. Look behind you, Vermont, we're right on your heels!

Since then, Maine Maple has been busy. This summer and fall producers and organizations are working the fairs to increase public awareness of "Maine's Gold". The Association purchased a top-of-the-line cotton candy machine and volunteers are developing new expertise. They've made some sticky messes, but the "spun gold" has been well received. Thank you, Vermont gurus.

While some in the industry bend their efforts towards promoting sales, others address organizational and regulatory issues back stage. The main organizational thrust is to incorporate regional chapters into the Maine Maple Association. Maine Somerset County Sugarmakers Association has functioned independently for years, but it has only recently become a subchapter of the MMPA. The Southern Maine Maple Producers Association, newly formed as an entity in its own right, is in the process. (Lyle Merrifield, Ben McKinney and Peter LeBrecque have done yeoman service in this regard.)

With the help of Kathy Hopkins, Maple Specialist of the Maine Agricultural Extension Service, Aroostook County maple producers have scheduled an October meeting to consider organizing. Eastern Maine producers are bidding their time.

Grading syrup tops the list of regulatory issues. At a recent meeting, the Commissioner of Agriculture, Robert Spear, Director Regulations, David Gagnon, and representatives from MMPA sought to insure maple syrup grading integrity. They proposed a mandatory Maine grade label for all bulk syrup. Border difficulties are another regulatory issue. Since 9/11 they have become a real problem. MMPA and MSCSA have been meeting with US Senators Snow and Collins to address these issues.

On August 11, Al Bolduc represented Maine at the IMSI quarterly meeting in Hawksbury, Ontario. He met up with representatives from all over New England in St. Albans, VT. They travelled the rest of the way together courtesy of Gary Gaudet, president of the Leader Evaporator Co. who made the company van available. The meeting focussed on the quality of excess syrup production and the ever present concern for adulteration. The IMSI policy is that any suspect syrup should be reported to an IMSI delegate for immediate investigation. Legal proceedings will be initiated if warranted.

Now to the future: next on the horizon is the NAMSC/IMSI joint annual meeting Oct. 23-25 in Truro, Nova Scotia, Canada. Hope to see you all there.



# MAINLY MAPLE

*By Alfred Bolduc and Mary Butler*

La saison des sucres dans le Maine nous en a fait voir de toutes les couleurs cette année. Dans le sud, ce fut court, mais l'eau était très sucrée. La production fut excellente pour ce qui est de la qualité, mais décevante en ce qui a trait à la quantité. Dans la région du centre du Maine, les érables n'ont pas coulé avant avril en raison de la température trop froide.

Par contre, la partie nord du Maine a connu une année exceptionnelle. Les érables ont commencé à couler à la mi-mars, et ça s'est poursuivi jusqu'au 1er mai.

Le comté de Somerset est le plus gros producteur de sirop d'érable (# 1) aux Etats-Unis. Regardez derrière vous, gens du Vermont, nous nous rapprochons de vous et sommes sur vos talons!

Depuis ce temps, l'industrie de l'érable dans le Maine a été assez active. Cet été et cet automne, les producteurs et les associations travaillent à mieux faire connaître au grand public "L'Or du Maine". L'Association a acheté la version dernier cri des machines à fabriquer la "barbe à papa" et des volontaires ont développé une nouvelle expertise à cet effet. Certes, cela ne s'est pas fait sans quelques dégâts collants, mais les "cônes dorés" ont finalement été bien reçus. Merci aux gourous du Vermont!

Pendant que certains dans l'industrie axent principalement leurs efforts sur la promotion et la vente, d'autres se penchent sur l'organisa-

tion et la réglementation de la production. Le point majeur, au niveau de l'organisation, est de bien intégrer les associations régionales à la "Maine Maple Association". L'Association des Producteurs de Sucre du Comté de Somerset a fonctionné de façon indépendante pendant deux ans et ne fut admise que récemment comme filiale (sous-chapitre) de la "Maine Maple Association". L'Association des Producteurs de Sucre du Sud du Maine, récemment formée comme entité autonome, est également en train de se joindre à la "MMA". (Lyle Merrifield, Ben McKinney, et Peter Labrecque ont fourni une collaboration appréciable en ce sens). Avec l'aide de Kathy Hopkins, spécialiste de l'Érable au Service de l'Extension de l'Agriculture à l'Université du Maine, les producteurs de sucre du comté d'Aroostook ont planifié une réunion en octobre pour considérer un regroupement. Les producteurs de l'Est du Maine attendent de voir les résultats, avant.

La principale problématique au niveau de la réglementation est à propos de la classification du sirop. Lors d'une récente réunion, le commissaire à l'Agriculture, Robert Spear, le directeur de la réglementation, David Gagnon, et des représentants de la "MMA" ont cherché une solution pour assurer la représentativité et la crédibilité de la classification du sirop du Maine. Ils ont ainsi étudié l'opportunité, pour tout le sirop en vrac produit au Maine, d'être revêtu d'une étiquette de classement obligatoire.

Les difficultés de circulation actuelles aux postes-frontière

(Canada-Maine) représentent également un important problème. Depuis les événements du 11 septembre, la situation s'est passablement empirée. La "MMPA" et la "MSCSA" ont prévu rencontrer les sénateurs américains Snow and Collins, pour leur soumettre cette problématique.

Le 11 août, Alfred Bolduc a représenté le Maine à la réunion trimestrielle de "IMSI", qui s'est tenue à Hawksbury, Ontario. Il a rejoint et rencontré des représentants de partout en Nouvelle Angleterre à St-Albans, au Vermont. Ils ont fait le reste du trajet ensemble grâce à la générosité de Gary Gaudet, président de la compagnie "Leader Evaporator Co.", qui leur a prêté gratuitement la mini-van de la

compagnie. La réunion s'est penchée principalement sur la qualité de la production de sirop excédentaire et sur la problématique de la falsification du sirop. La politique de la "IMSI" est que tout sirop suspect devrait être déclaré à un représentant de la "IMSI", pour inspection et enquête. Des procédures judiciaires devraient aussi être entreprises, si nécessaire, contre les contrevenants.

Pour le futur, à l'horizon il y a le "North American Maple Syrup Council" et le "International Maple Syrup Institute", qui tiendront leur réunion annuelle conjointement du 23 au 25 octobre prochain, à Truro, en Nouvelle-Écosse, au Canada. En espérant tous vous y rencontrer!

---

### New - Maple Leaf Line Bottles



Sizes : 100ml, 250ml, 500ml, 32oz, 1L

## **RICHARDS PACKAGING INC.**

**Dartmouth**  
Tel. 902-468-8211

**Montreal**  
Tel. 514-697-8690

**Quebec**  
Tel. 418-682-5002

**Toronto**  
Tel. 905-624-3391

[dartmouth@richardspackaging.com](mailto:dartmouth@richardspackaging.com)  
[quebec@richardspackaging.com](mailto:quebec@richardspackaging.com)

[mtlsales@richardspackaging.com](mailto:mtlsales@richardspackaging.com)  
[tosales@richardspackaging.com](mailto:tosales@richardspackaging.com)

**Web Catalogue : [www.richardspackaging.com](http://www.richardspackaging.com)**

---



# Invest in Maple

*Every penny helps*

The future of the maple industry depends on continued research in areas such as sugarbush management, syrup production methods, product quality, packaging, marketing and syrup adulteration.

These issues along with many others are of common concern to all of us regardless of whether we package only a few gallons or several thousand gallons of syrup each year.

## **Contribute a penny for every syrup container you fill**

Voluntary donations of a penny for every container you fill helps us reach our goals. Donations can be made through your plastic, glass or metal container suppliers or you may send your contributions direct to the NAMSC Research fund.

Annually in October the North American Maple Syrup Council reviews research proposals and distributes funding to qualified universities and institutions for maple research projects that benefit everyone, industry wide, in the US and Canada.

Our thanks to all of you who actively support this important program and we invite those not yet participating, to join us in investing "a penny per container" to the future of maple.

### For more information please contact:

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

Phone 860 974-1235, Email: [r.norman@snet.net](mailto:r.norman@snet.net)

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

Phone 860 658-5790, Email: [mgirard@simscroft.com](mailto:mgirard@simscroft.com)

The NAMSC-Research Fund is a non-profit, volunteer managed committee of the North American Maple Syrup Council, Inc. (10/03)

# BLENDING SYRUP — PART II

## BLENDING HEAVY SYRUP WITH WATER OR SAP TO LOWER ITS DENSITY — DETERMINING HOW MUCH I NEED

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

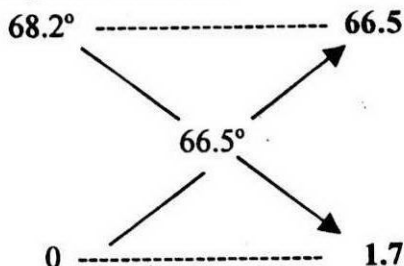
This article is Part II of a two part series discussing adjusting off-density syrup by blending it with syrup, sap, or water. Part I, which appeared in the last edition of the Maple Syrup Digest, introduced the method of alligation and discussed using it to determine the combining proportions of two syrups to obtain a desired density. If you aren't familiar with the method of alligation, you may want to take a moment and read Part I before proceeding. This article will demonstrate how to determine the amount of sap or water to add to heavy syrup to reduce its density to the desired level.

When blending syrup with water or sap on a weight basis, the proportions to mix can be determined using the method of alligation in the same way it was used when blending syrup with syrup. When blending on a volume basis, the proportions must be adjusted because of the differences in the weights of syrup and water or sap.

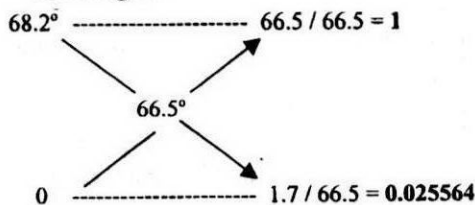
### WEIGHT BASIS

Let's first look at blending on a weight basis, and determine how much water to blend with 68.2° Brix syrup to

reduce its density to 66.5° Brix. The procedure is the same as blending syrup with syrup, but in this case we place the density of the syrup and that of water (0° Brix) in the upper and lower left-hand corners of the diagram, the desired density of the syrup in the center, and subtract across the diagonals as follows:



Again, since we are asking the question: "How much water should I blend with the syrup?" let's set the proportion of syrup equal to "one" in the ratio by dividing both numbers by 66.5 resulting in:

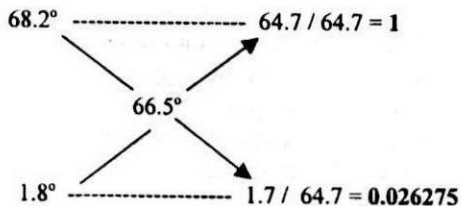


If we wished to lower the density of 350 pounds of 68.2° Brix syrup to 66.5° Brix by adding water, we would add:

(350 pounds syrup)  
(0.025564 lbs. water/lb. syrup) =  
8.95 pounds water

The process for determining how much 1.8° Brix sap to mix with the 350 pounds of 67.9° Brix syrup to lower its density to 66.5° Brix is exactly the same:

Converting the ratio to a more useable form by dividing both numbers by 64.7:



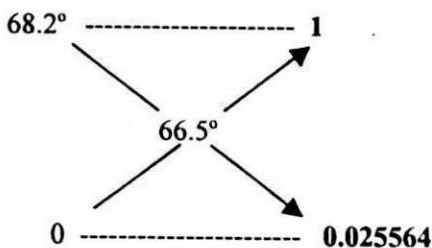
If we wished to use 1.8° Brix sap to lower the density of 350 pounds of 68.2° Brix syrup to 66.5° Brix, we should add:

(350 pounds syrup)  
 (0.026275 lbs. water/syrup) =  
 9.2 pounds sap

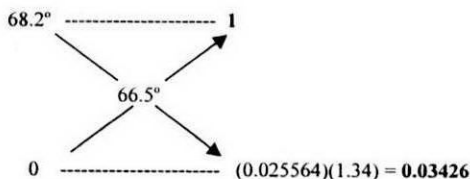
### VOLUME BASIS

When blending syrup with syrup we observed that although the proportions determined by the method of alligation were, strictly speaking, weight proportions, they could be interpreted as volume proportions with relatively little error because the difference in weight between syrups of different densities was very small. This is not true when blending syrup with water or sap. Depending on its density, a gallon of syrup generally weighs between 11 and 11¼ pounds, a gallon of water or sap between 8 and 8½ pounds. When combining syrup with water or sap, the weight proportions determined by the method of alligation must be adjusted for these differences in weight.

Again, this is best understood by example. Let's look again at the example above blending water with 68.2° Brix syrup to reduce its density to 66.5° Brix. The weight proportions determined were:



A gallon of 68.2° Brix syrup weighs approximately 11.15 pounds; a gallon of water weighs approximately 8.33 pounds. By multiplying the proportion of water (0.25564) by the weight of a gallon of the syrup divided by the weight of a gallon of water (11.15 divided by 8.33 = 1.34) we convert the weight ratio to a volume



ratio as follows:

0.03426 gallons (4.4 fluid ounces) of water should be blended with one gallon of 68.2° Brix syrup to reduce the density of the blend to 66.5° Brix.

Now, let's see if we got the same answer using weight and volume. In our first example above (using weight) we determined that 8.95 pounds of water should be added to 350 pounds of 68.2° Brix syrup to reduce its density to 66.5° Brix. We have now determined that 0.03426 gallons of water should be added to 1 gallon of 68.2° Brix syrup to reduce its density to 66.5° Brix. Since 350 pounds of 68.2° Brix syrup has a volume of 31.4 gallons (350 divided by 11.15), 1.076 gallons of water (31.4 times 0.03426) must be added to

reduce the density to 66.5° Brix. That much water weighs 8.96 pounds (1.076 times 8.33). Using the method of alligation to determine the weight proportions and applying the weight to volume correction factor of 1.34 to determine the volume proportions produced equivalent answers (except for rounding error).

Fortunately, the determination of the correction factor can be greatly simplified. If the density of the syrup to be diluted is between 66.5° and 70.0° Brix and water or sap with a density of 4° Brix or less is used, 1.33 can always be used as the correction factor. If this is done, the maximum error in the desired density will be around 0.02° Brix. Again, this is far more accurately than most of us will ever measure.

## SUMMARY

### What You Really Need To Know

The method of alligation provides a quick and easy way to determine the proportion of syrup, sap, or water that should be combined with an off-density syrup to obtain a blend of the desired density.

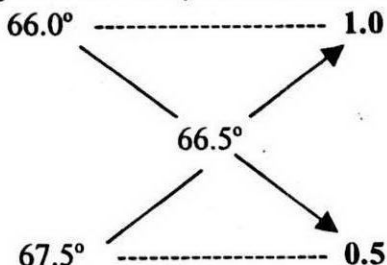
### BLENDING SYRUP WITH SYRUP (FROM PART I)

When blending syrup with syrup the proportions determined by alligation may be applied to either weight or volume measurements. 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 number from the smaller. The proportion of each syrup to blend is directly across from it in the diagram.

As an example, how much 67.5° Brix syrup should be mixed with 10 gallons or 110.4 pounds of 66.0° Brix



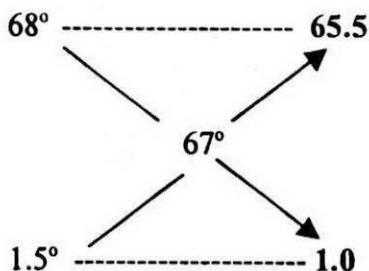
syrup raise its density to 66.5° Brix.

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.

### BLENDING SYRUP WITH WATER OR SAP

When blending syrup with water or sap the proportions determined by alligation may be applied to weight measurements but must be adjusted when applied to volume measurements because of the relatively large difference between the weights of syrup and water or sap.

When using weight measurements, determine the proportion of syrup and water or sap as summarized above for blending syrup with syrup. As an example, how much 1.5° Brix sap should be blended with 55.7 pounds of 68° Brix syrup to

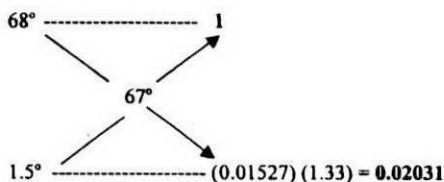


reduce its density to 67° Brix.

Dividing both numbers by 65.5 indicates that 0.01527 pounds of 1.5° Brix sap should be combined with each pound of 68° Brix syrup to produce a blend with a density of 67° Brix. In our problem, 0.85 pounds of 1.5° Brix sap (0.01527 times 55.7) are required to reduce the density of 55.7 pounds of 68° Brix syrup to 67° Brix.

When using volume measurements, determine the proportion of syrup and water or sap as if using

weight and then adjust the proportion of sap or water using the Rule of 1.33. Using the above example of blending 1.5° Brix with of 68° Brix syrup to produce a blend with a density of 67° Brix, the volume mixing proportions would be



0.02031 gallons of 1.5° Brix sap should be mixed with each gallon of 68° Brix syrup to produce a blend with a density of 67° Brix. In our problem, 0.102 gallons or 13 fluid ounces of 1.5° Brix sap should be mixed with 5 gallons of 68° Brix syrup to produce a blend with a density of 67° Brix.

**\$ SAVE \$ SAVE \$**  
Early Order Discount Program

## Famous Hobbyist Delight

- All makes and sizes of Pans at unbeatable prices.
- Specialists In All Welded Stainless Steel Evaporators (All Sizes)



24" x 6'  
(50-300 Taps)  
All the bells & whistles of a large evaporator built into a 24"x6' at a LOW Price

Introducing  
the Maple Industry's  
Most Informative Website

[www.algierevaporator.com](http://www.algierevaporator.com)

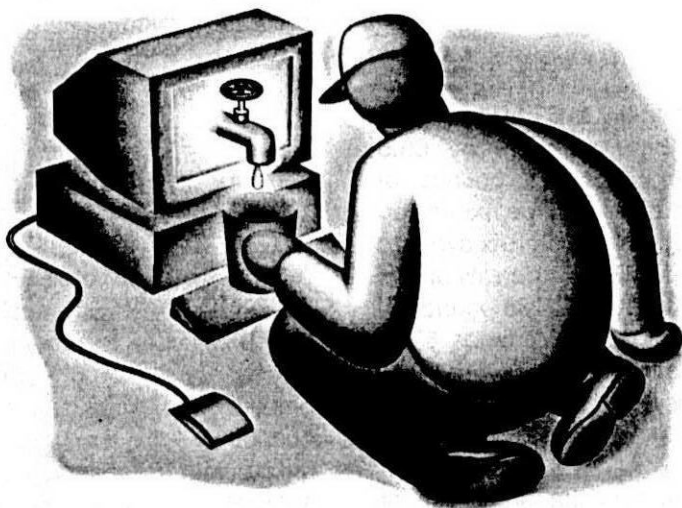
CHECK OUT  
OUR  
PRICES!!

**ALGIER EVAPORATOR COMPANY, INC.**

Tel. (802) 868-9289 Fax (802) 868-4113 Email [small@sover.net](mailto:small@sover.net)

555 Vt. Route 78, Swanton, Vermont 05488

# Tap into the Internet with Bascom Maple Farms!



## Introducing [www.BascomMaple.com](http://www.BascomMaple.com)

Purchase new & used maple equipment on our secure website

### **SPECIALS**

2' x 7' Cantin oil fired evaporator w/stainless pans,oil burner, insulated arch and stainless stack	\$2,900.00
5' x 8' Small Brothers piggyback pan w/blower and drip tray (fits a King flue pan)	\$2,800.00
3' x 8' Small Brother evaporator w/stainless pans	\$3,200.00
2' x 4' Small Brothers evaporator w/stainless pan	\$ 950.00
2' x 6' Grimm evaporator w/stainless pans	\$1,500.00
15 Bbl gathering tanks and 2 wheel heavy duty trailer	\$ 850.00
1000 Gallon stainless milk tank w/manhole on top	\$1,400.00
7" Double bank Grimm aluminum filter press	\$1,600.00
Horizontal single vacuum releaser	\$ 525.00

### **BASCOM MAPLE FARMS**

RR #1 BOX 137, ALSTÉAD, NH 03602

Tel. 603-835-6361 • Fax 603-835-2455

[sales@BascomMaple.com](mailto:sales@BascomMaple.com)



# NEWS FROM CONNECTICUT

By John Trumbull

This spring and summer have been rough in the northwestern part of the state. An awful lot of cold, wet weather early on delayed the corn and many vegetables. Extremely hot and humid weather during July and August seemed to help the farmers catch up to some degree. It remains to be seen how the maples will be affected. Some of the larger trees seemed to be stressed. We are hoping Mother Nature will be more cooperative this fall and winter than she has been in the last year.

A reminder that the MSPAC directors meeting will be September 17th at Northwest Parks, Windsor. Also, the annual meeting for the entire Association will be November 8th at a place to be announced. The MSPAC Directors will be presenting the revised and rewritten Connecticut Maple Syrup Act to the membership at this meeting. The volunteer committee has finished its work, at this writing, and forwarded its work to the Board of Directors.

The annual summer picnic was held July 27th. This was a combined affair with the Massachusetts producers hosting the picnic at the Heath, MA Fairgrounds.

Over 150 producers and family were treated to tours of two sugar houses and a demonstration of packaging syrup in glass containers. Bob Coombs gave a talk on antique equipment such as tops, cans, buckets and other old time equipment from his collection.

The picnic also featured a maple pie contest, with judges appointed from each state. The pies were served for desert, the entries were eaten and much enjoyed by all.

All the regular picnic food was served, corn, chicken, ham, potato salad, etc. Those picnic goers who wanted coffee had to wait for Ron Wenzel from Connecticut to get to the fairgrounds.

Everyone agreed the picnic was a success and plans are underway to hold this affair in Connecticut next summer.

## **FULL TIME POSITION AVAILABLE in the Production & Processing of Maple Syrup**

- Some experience in installation, maintenance, & cleaning of tubing systems.
- Some mechanical ability required along with general knowledge of a Maple Operation
- We are a 30,000+ tap operation & also process and package syrup year round.

**Wages Negotiable**

**Chance for Advancement**

**Pension Plan Included**

**Includes Extra Nice One Family House  
and Paid Vacation**

## **Refrigerated Bulk Maple Syrup FOR SALE - All Grades Equipment For Sale**

1 Leader 2x4 Stainless Steel gas  
finisher, complete — \$750

5 HP Surge Vacuum Pump,  
New Motor — \$750

Osmonics RO machine, 750 GPH — \$4900  
Stainless Steel & Glass Lined Vacuum  
& Non-vacuum Tanks For Sale

**BUYING ALL GRADES OF MAPLE SYRUP**

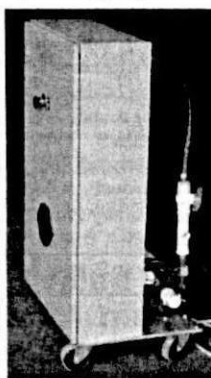
**ADIRONDACK MAPLE FARMS**  
518-853-4022 • FAX: 518-853-3791

# NYS MAPLE PRODUCERS CONFERENCE SCHEDULED FOR JANUARY 9TH AND 10TH, 2004

The NYS Maple Producers Winter Conference has been scheduled for January 9th and 10th, 2004, at the Vernon-Verona-Sherrill Central School, Verona, NY. Beginning with a Friday evening social, the winter conference provides numerous workshops on a wide range of related maple topics and showcases maple equipment and supplies at its annual trade show. Last year, more than 400 maple enthusiasts from 8 states and Canada attended the workshops and 18 vendors were featured at the trade show.

Highlighting this year's conference will be a variety of topics addressing producer-oriented issues. Topics such as the use of micro-taps and vacuum techniques will be presented focusing on increased profits for maple producers. Other conference topics will include forestry management techniques, tubing installation and cleaning, vacuum systems for tubing, marketing strategies, value-added products, Maple Weekend tips and the latest in maple research.

The V.V.S. High School is located between Utica and Syracuse, New York on State Route 31 and is just two minutes from NYS Thruway Exit 33. Overnight accommodations are within five minutes of conference site. More information on conference topics and presenters will follow in the Maple Syrup section of Country Folks, Farming Magazine, The Maple Digest and Maple News.



## STEADY PROFITS! SAP STEADY UV MAPLE SAP STERILIZER

**Kills bacteria in  
maple sap!**

**Produce more Grade A  
product for LESS**

- Tests at Cornell University show 100% kill of all bacteria present at time of treatment
- Flow rate of 15 GPM - 900 GPH
- Self contained unit with built in supply pump
- Uses 115V current - draws 15AMP
- Compact - 24"x24"

"Sap Steady really paid off this year. By keeping the sugar content high, we were able to produce more high quality product in an uncertain year."

*Howard Boyden, MA Maple Producer*



## THE CURE FOR TRACTOR FEVER Compact, Powerful & Priced Right!



*Pictured -  
Goldoni Master with  
Tafjun winch,  
available in  
regular or articulated  
steering with  
40-63 hp engines*

**Compare our price!  
Call for quote!**

**Goldoni compact tractors are  
available in models with diesel  
engines from 20 - 83 HP**

## TAJFUN®

**Turn your tractor into a log skidder  
with Tafjun 3 pt. hitch winches!**

- 6 models available
- 200+ feet of cable
- Up to 10 tons pulling power

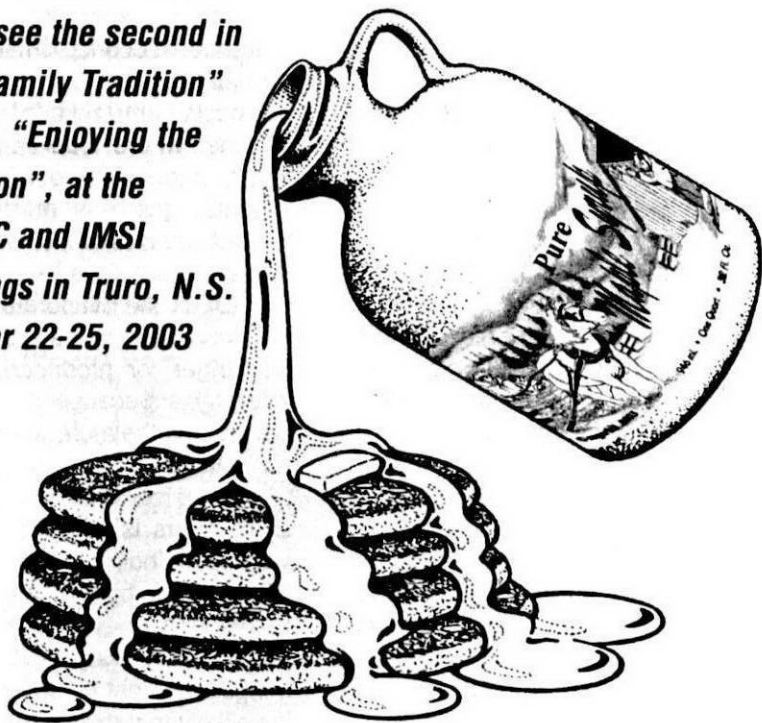


OESCO, Inc. • P.O. Box 540, Rte. 116 • Conway, MA 01341  
800-634-5557 • 413-369-4335 • FAX 413-369-4431  
[www.oescinc.com](http://www.oescinc.com) • [info@oescinc.com](mailto:info@oescinc.com)

# sugarhill<sup>®</sup>

## CONTAINERS

*Come see the second in  
our "Family Tradition"  
series, "Enjoying the  
Tradition", at the  
NAMSC and IMSI  
meetings in Truro, N.S.  
October 22-25, 2003*



**Available in standard and metric sizes**

P.O. Box 490 • 262 Millers Falls Road.  
Turners Fall, MA 01376  
Phone: 413/863-2222  
Fax: 413/863-3774

***"The Plastic Bottle People"***

# MANAGING A SMALL LEAD-SOLDERED EVAPORATOR TO KEEP LEAD OUT OF SYRUP

*Timothy Wilmot, Mark Isselhardt  
and Timothy Perkins  
Proctor Maple Research Center*

This study was funded by grants from the North American Maple Syrup Council and the U.S. Dept. of Agriculture

Sugarmakers have made great progress in eliminating lead from finished syrup as demonstrated by recent results from VT state agricultural inspectors, who found that 2003 random samples of syrup yielded results that were all well below the state action level of 250 parts per billion (ppb). However, older equipment that can contribute lead to syrup is still being used by some sugarmakers. Managing this equipment in a way that minimizes lead addition to sap and syrup is essential. Producers using equipment that contains lead should have their syrup tested periodically.

Small producers, (a relative term, used here as people who make less than 50 gallons of syrup a year) have a greater potential for higher lead in their syrup for several reasons: First, the initial investment in equipment may be low because sugaring is something done on a trial basis and the sap gathering and boiling system might be cobbled together from old or makeshift equipment that may not be efficient, or even food grade. Using old galvanized buckets and spouts left over from your grandfather may feel like a continuation of a nice family tradition, but some of the older

metal buckets can contribute high levels of lead to syrup. All galvanizing used in maple equipment before 1994 contains lead, and older equipment may also contain terneplate or other high-lead alloys. Using garden hose or plastic garbage cans for sap storage and transfer is similarly unwise because these plastics are usually not food grade and may contain heavy metals. Cheaper, used equipment is more likely to be lead-soldered. Second, small producers sometimes leave sap in lead-containing buckets or tanks for long periods of time, where lead can continually leach into the sap. This is done because there is no time to boil except on weekends, or because it takes several days to collect enough sap to run the evaporator. Third, sap residence time in the evaporator may be longer for producers with small operations because the evaporator, particularly the arch, is not as efficient as a large, modern unit. The wood firebox of some 2' x 4' and 2' x 6' evaporators is not large enough for very rapid boiling; if oil is used the burner may be an older inefficient model; or the new producer may simply want to boil slowly out of fear that things could get out of hand. Since it is unlikely that the sap has been concentrated by a Steamaway, Piggyback, or an R.O., the boiling process starts with raw sap. The longer that the sap is in a lead-soldered evaporator, the greater the potential for lead to leach into the liquid. Fourth small sugarmakers may not belong to a sugar-makers association, or attend maple schools offered in their state or province, and may be lacking the latest information about

maple production, including ways to reduce lead. Despite these factors, it is possible for small producers to make syrup that is very low in lead.

To help us better understand ways to manage small evaporators, in 1998 and 1999 we set up three 2' x 6' evaporators at the PMRC for experiments. One evaporator was welded stainless steel and certified lead free; the other two, one stainless steel and one English tin, were soldered with 50:50 solder. Sap could be fed to the evaporators from a common tank. We used oil arches with older style oil burners for boiling.

Lead was monitored by taking samples from the sap before it entered the evaporator, and from various points in the evaporator, including the drawoff. All liquid that was

taken at a density less than syrup was subsequently boiled in laboratory glassware until it was syrup, so that all lead numbers given here are on a syrup basis. A summary of several experiments is presented below. In all cases, we boiled with about 1 inch of sap in the pans, and made every attempt to move the sap quickly through the pans. When we started with sap that was low in lead (< 50 ppb) the two 50:50 soldered evaporators generally produced syrup that was 200-400ppb. When starting up after leaving the evaporator for 2 or more days, the first syrup drawn off for the day was usually much higher than this. The lead content of the finished syrup dropped as successive batches of syrup were removed, and was lowest at the end of the day.



## Everything for the Maple Producer Large or Small

Mon.-Sat.: 8:00-5:00  
Phone: 315/852-3326  
FAX: 315/852-1104  
[www.countrysidehardware.com](http://www.countrysidehardware.com)

- Leader-King-Grimm Evaporators
- Sugar-Hill Plastic Jugs
- Lamb Tubing & Fittings
- MARCLAND Draw offs
- Vacuum Equipment (let us help you find a solution to fit your needs)
- Open year round — Fully stocked show room
- Call us for a listing of used equipment
- We USP Daily

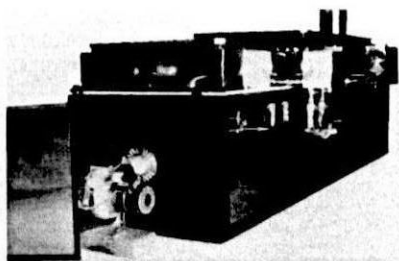
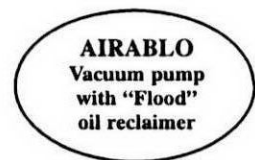
Call or write for our catalog

### Countryside Hardware

PO Box 409, Albany St.  
DeRuyter, NY 13052



Give your present evaporator  
up to 70% more capacity  
with a steam away.



An explanation for this decrease in lead content during the course of boiling comes from studying the effects of sugar sand left in the pan overnight. Sugar sand concentrates lead when it is formed in the presence of lead. In one experiment we put sugar sand collected from one of the lead-soldered evaporators in glass beakers with syrup at a ratio of 1 gm sand:100 gm syrup. In 3 days, dissolved lead (lead that can't be filtered out with syrup filters) in the syrup increased from 200ppb to over 2000ppb.

In another experiment we created sap with a high lead content by letting it sit in galvanized buckets for several days, and by recirculating it through a bronze gear pump (most bronze contains lead). The sap, now containing about 500ppb lead, was

boiled in the welded lead-free evaporator. The sweet (partially boiled sap) was left in the front pan for 8 days in cool weather. When we drew off some of this sweet before restarting the evaporator, it had increased in lead content to over 5000ppb. The source of the lead was the sugar sand, which contained high concentrations of lead that had precipitated from the contaminated sap.

Putting together these separate pieces in information, it became obvious that the high lead content of the first batch of syrup of the day was caused by the liquid sitting in the pans for several days since the previous boil, with the sugar sand contributing lead to the syrup. In the case of syrup made in the lead soldered evaporators, the solder was also



## Sugar Bush Supplies Co.

2611 Okemos Road  
Mason, Michigan 48854

517.349.5185 • fax 517.349.3088  
SBFarms @ concentric.net

**We have many unique packaging items for your syrup, candy & cream!**



**Open year-round. Fully stocked showroom. We ship daily.**

**Equipment and Supplies for All Your Sugaring Needs !**

leaching lead to the liquid. After boiling for a few hours, the old, lead contaminated sap was used up and the syrup was being made with fresh sap with low lead content.

In an effort to reduce the amount of lead that was transferred to the sweet when the evaporator was shut down, we drained the front pan into buckets at the end of the day. This liquid was not filtered, but contained little sugar sand, as most remained stuck to the pan. After 3 days this sweet had not increased in lead content. We added the sweet back to the pan after boiling got under way.

Another possible solution to the problem of lead from sugar sand leaching into liquid is to clean the pans often. Cleaning a lead-soldered evaporator (we used a brush and water, but no acid) could produce one of two contradictory results: it removes the sugar sand (a source of lead), but also re-exposes the lead solder (another source of lead). Many researchers have shown that a light coating of sugar sand attached to the lead seams actually helps reduce the transfer of lead to the syrup. Acid cleaning of 50:50 seams is likely to make the metal highly susceptible to lead leaching. We did not find a significant difference in lead content between syrup made using a pan freshly cleaned with water, and a pan with some sugar sand attached, when that sugar sand came from sap that started with a low amount of lead. In the case of the boil using high-lead sap, the resulting sugar sand should have been cleaned out. Obviously cleaning has other benefits, including the production of lighter syrup. Finally, we found that scorch-

ing the syrup (not badly) in a lead-soldered front pan produced syrup with very high lead. The syrup did not taste bad, but the intense heat mobilized a lot of lead. This was an accident that led to useful information.

In summary, from these experiments, the most useful pieces of information for people using lead-soldered evaporators are:

1. Remove as much sweet from a lead soldered evaporator as possible if it is going to be shut down for several days. Drain the front pan into buckets, keeping the densest liquid separate from the rest. When restarting the evaporator, pour the highly concentrated sap back in the front pan near the draw off. This will "jumpstart" the evaporator and reduce the time that sap remains in the evaporator.

2. Avoid using sap that has stood in metal buckets for several days, as it will probably have a high lead content. It will produce a syrup with higher lead, and it will also produce a sugar sand that is more likely to contaminate further batches of syrup.

3. Suspect any syrup that is partially burned, and syrup made from sweet that sat in the pan for a few days, as having above-average lead content. Blending syrup from throughout a boiling period will reduce peak lead concentrations.

4. Clean small lead-soldered evaporators carefully and often but without acid or other caustic cleaners that produce a bright finish on soldered seams and may increase the amount of lead that can leach into the sap.

Other information about keeping lead out of syrup can be found at our website: [www.uvm.edu/~PMRC](http://www.uvm.edu/~PMRC)



## **Maple Producers, Join** **Tug Hill Resources Investment for Tomorrow**

THRIFT was formed in 1981 to promote the wise stewardship of the Tug Hill region of New York State, and has been growing ever since. THRIFT exists to help sustain the unique character and lifestyle of the Tug Hill region by promoting informed management and care of its forests, wildlife, water, and lands. This is done primarily through woodwalks, workshops, tours of forest-related businesses, informative mailings, and grassroots (forest roots) participation in the Tug Hill region.

*Northern Woodlands* magazine is an official membership benefit of THRIFT. Join today! For more information, contact the THRIFT representative at 3041 Schultz Road, Camden, NY 13316 or call (315) 841-8874, or on the web at [www.tughillresources.org](http://www.tughillresources.org).



## **Northern Woodlands**

**A New Way of Looking at the Forest**

*Northern Woodlands'* contributors include many of the Northeast's leading experts on forestry, conservation, and wildlife. Skillfully written and illustrated, the magazine captures the beauty and spirit of the forest and will keep you up-to-date on natural events in the woods and informed about developments in the environmental community. You'll get...

- ✓ Tips on identifying the trees, plants, and animals in your woods.
- ✓ Ways to manage your forest for wildlife and timber.
- ✓ The latest on the region's contentious environmental and economic disputes, from a refreshingly balanced perspective.
- ✓ Profiles of people who work the forest.
- ✓ Ways to work safely in your woods – from cutting trees and chopping firewood to clearing trails.
- ✓ Updates on standing timber prices, pending legislation, and the activities of environmental and business organizations.

*Northern Woodlands* puts you in touch with fascinating people who are devising new ways of becoming better stewards of the land and its bounty. No other source makes living and working in the forests of New England and New York more enjoyable than *Northern Woodlands*.

On the web at [www.northernwoodlands.org](http://www.northernwoodlands.org) or contact  
*Northern Woodlands* P.O. Box 471 Corinth, VT 05039



# NORTH AMERICAN MAPLE SYRUP COUNCIL & INTERNATIONAL MAPLE SYRUP INSITUTE 2003 ANNUAL MEETINGS

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

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: jrbentley@ns.sympatico.ca

The registration forms and information will also be available on the Nova Scotia Maple Producers web site [www.novascotiamaplesyrup.com](http://www.novascotiamaplesyrup.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.



**CREATIVE  
LABELS**

**OF VERMONT INC.**

**WWW.CLOV.COM**

## CREATIVE LABELS SELL!

### MAPLE PRODUCERS

- Sap Wrap • Hang Tags • Grade Labels
  - Neck Tags • Peek-A-Boo • Nips • Foil Stamp
- Labels for all Complimentary Products**
- Candy • Pancake Mix • Butter

**CUSTOM DESIGNED LABELS**

**800-639-7092 • Fax : 888-655-4347**  
**www.clov.com ~ email: sales@clov.com**

**9 Tigan Street • Winooski • VT • 05404**

**Dedicated to Excellence. Quality and Service**

# waterloo small MAPLE PRO INC. U.S.A.

## Maple Sugaring Equipment



Quality, Performance, Service,  
Tradition

With a Maple Sap Concentrator built by Lapierre Inc.  
you can save on:  
Production time, Energy consumption, Manpower costs

Contact us  
for a Free Catalog  
Sugaring supplies & containers  
for all size producers

You may also  
view our complete catalog online:

[www.waterloosmallusa.com](http://www.waterloosmallusa.com)  
OR  
[www.maplepro.com](http://www.maplepro.com)



TURBO 600 gallons



TURBO 1200 gallons

*Please call for price*



TURBO 1800 gallons



TURBO 2400 gallons

Price of complete R.O. includes start up with water, free delivery,  
free filters & cleaner, free cleaning of membranes after 1st year.

3478 Perley Road • Enosburg Falls, Vermont 05450  
800-762-5587 • 802-933-8222  
fax: 802-933-2666 e-mail: [info@waterloosmallusa.com](mailto:info@waterloosmallusa.com)



Delancey, N.Y. 13752  
Phone: (607) 746-6215  
Fax: (607) 746-8367

### Your Full Service Maple Syrup Equipment Distributor

In Stock: Jugs, Tubing, Glass Containers, Bottlers, Evaporators and Much More  
Distributor for **WATERLOO SMALL USA**

Now Offering Tubing Installation Service We have teamed up with, **COREYS MAPLE SERVICES** to offer a tubing renovation and installation call us for details.

### USED EQUIPMENT

- 3' x 10' Waterloo oil fired Thunderbold evaporator complete  
170 gal/hour — \$9500.00
- 3 1/2' x 10' Waterloo Small SS pans. Cross flow extra pan never  
used. Mint — \$6950.00
- 2' x 6' Small Brother Forced Draft SS pans — \$1800.00
- 2 1/2' x 8 1/2' Waterloo wood fired evaporator SS pans — \$2500.00
- 3' x 12' Grimm wood fired evaporator SS pans — \$2800.00
- Osmotic RO Machine 200 gal/hour — \$2800.00
- Osmotic RO Machine 250 gal/hour — \$2900.00
- Coster RO Machine 350 gal/hour — \$3900.00
- 3 1/2' x 8 Pre heater Stainless steel — \$900.00
- Stainless steel syrup pans 4' x 3' and 4' x 5' — \$300 & \$500
- 6' x 13 1/2' and 5' x 16' wood chip burner evaporators with pre heaters  
stainless steel pans — \$3500.00 each
- 2' x 6' Propane Finishing Unit \$850.00

**NEW YORK STATE LICENSED SYRUP BUYER BARRELS AVAILABLE**

## Justus Asthalter Maple Syrup and Equipment

*Servicing the New York, New Jersey  
and Pennsylvania Maple Industry  
For Over SIX DECADES*

**Dealer for: Leader • Grimm •  
King Evaporators • Sugar Hill  
• Lamb Tubing — New and  
used equipment in Stock  
Glass • Cans • Jugs • Spiles •  
Tubing • Buckets**

**Delivery Available**

850 Aden Road • Parksville, NY 12768

**(845) 292-8569**

## THE MAPLE SUGARING STORY

*About a Proud Tradition of  
Northeastern North America*

Video 30 minutes \$29.95 Ppd.  
Illus. Guide 90 pages \$4.50 Ppd.



### INTERNATIONAL AWARD-WINNING VIDEO TAPE

Please add 5% Sales Tax for Vermont addresses  
Checks, in U.S. funds to:

**PERCEPTIONS, INC.**

1030D Hinesburg Road,  
Charlotte, Vermont 05445

Visa/Mastercard: 802-425-2783

Fax 802-425-3628 • email [PerceptVT@aol.com](mailto:PerceptVT@aol.com)

# FIELD EVALUATION OF THE SMALL DIAMETER SPOUT FOR MAPLE SAP COLLECTION

By

Lewis J. Staats and Colin A. Campbell  
Department of Natural Resources  
Cornell University, Ithaca, New York 14853

**Abstract.** Beginning in 1999, a newly introduced maple sap spout for use in smaller diameter tapholes was evaluated at Cornell University's Uihlein Sugar Maple Research/Extension Field Station near Lake Placid, New York. After two sap production seasons, no significant differences were found in sap volume yield and sap sugar concentration in maple sap collected with the small diameter spout compared with that of the conventional sap spouts. For tapholes fitted with the small diameter spout, the rate of taphole closure was significantly faster and the amount of discoloration was considerably less. The use of the small diameter spout provides an alternative to traditional diameter spouts by providing comparable sap yield and sap sugar concentration while exhibiting less xylem discoloration with faster taphole closure. In addition, the use of the small diameter spout provides an alternative for the producer to tap with lighter, smaller tapping equipment and to insert the spout into the taphole with less effort reducing the risk of tree damage. (In this report, we have chosen the term "small diameter spout" to identify the spout investigated in this study rather than commercial names commonly used by the maple industry.)

## BACKGROUND

The basic concept of tapping sugar maple trees for collecting maple sap in commercial maple syrup production has remained unchanged for over 100 years (Koelling and Heiligmann 1996). Metal spouts have been used traditionally in bucket operations and plastic spouts are used in more modern plastic tubing sap collection systems. The basic design of spouts used for tapping trees for sap production has remained relatively the same (Staats and Kelley 1996). The traditional procedure is to drill a 7/16 in. (1.11 cm) diameter hole about 2 to 2 1/2 in. (5.1 - 6.4 cm) deep into the tree followed with a spout tapped lightly into the taphole with the use of a hammer.

Nearly a century ago, a study of sap yield in relationship to taphole diameter stated larger tapholes provided greater yields of sap (Jones et al. 1903). In contrast Robbins (1965) reported no significant differences in sap yield among 7/16 in. (1.11 cm), 11/16 in. (1.75 cm), and 15/16 in. (2.38 cm) diameter tapholes but found less sap yield from 3/8 in. (0.95 cm) diameter tapholes compared to sap yield from 7/16 in. (1.11 cm) diameter and larger tapholes. Coons (1987) also recommended 7/16 in. (1.11 cm) diameter tapholes stating smaller diameter tapholes produce less sap while tapholes larger than 7/16 in. (1.11 cm) did not increase sap yield. The 7/16 in. (1.11 cm) diameter was chosen for good sap production but small enough to allow taphole closure in an adequate length of time and has remained the traditional diameter for maple industry spouts (Walters and Yawney 1982). A study of spout design among four common commercial metal spouts for use with buckets (Robbins 1965) and comparisons of plastic spout designs for use in plastic tubing sap collection systems (Rye and Walters 1977; Staats and Kelley 1996) did not indicate any significant differences in sap yield or sap sugar concentration among those spout designs studied.

Spouts used for sap production are tapered where they enter the taphole. When insert-

ed into the taphole and tapped lightly, the spout is seated to form a water and airtight seal. If tapped into the taphole with too much force or if the wood at the taphole site is frozen, there is risk of the bark and xylem (sapwood) splitting above and below the taphole which may cause permanent tree damage (Walters 1978). A spout of unique design that did not require force to be inserted into the taphole was found to allow faster closure of tapholes compared to the conventional spout that had to be seated with a hammer (Staats and Kelley 1996). The design and use of spouts that reduce the need for force for seating in the taphole along with proper tapping techniques can reduce the risk of damage to tree tissue adjacent to the taphole. This encourages early closure of tapholes, which is beneficial to the productivity and long-term management of sugar maples for sap production.

During the last forty years, the advent of plastic tubing for sap collection has greatly replaced and reduced the more traditional use of buckets for sap collection. Although buckets still remain present in maple operations, closed-tubing systems serve the maple industry for collection of sap for most producers and for nearly all maple operations with substantial numbers of taps. Along with permanently installed plastic tubing systems, vacuum pumping has been accepted for its benefits of cost-effectiveness, increase in operational efficiency, and well-documented increased sap production (Morrow and Gibbs 1969). Although examination of higher levels of vacuum resulted in significantly higher sap volumes, the application of vacuum at a level of 15 in. (380 mm) Mercury (Hg) at the tap, considered "high-vacuum" in industry terms, was found to be the optimal level of vacuum for sap yield (Kelley and Staats 1989). Because the benefits of vacuum have been clearly demonstrated and applied throughout the industry, further research associated with plastic tubing sap collection system design or installation components, such as spouts, will be best served in collection systems with applied high-vacuum.

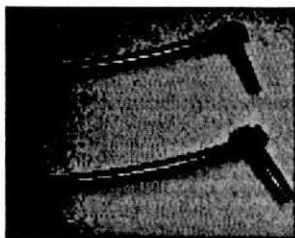


Figure 1. The small diameter spout (top) and control spout (bottom).

The infamous "January 1998 Ice Storm" severely impacted sugarbush stands in several Northeastern states and Canadian provinces (Staats 2001). Producers, uncertain of the benefits and effects of tapping ice-damaged trees but wanting to remain economically viable with continued production, felt tapping more conservatively could help reduce the amount of wound area and, thus, the energy demands on the damaged trees (Connelly et al 1999). During the restoration and replacement of sap collection tubing systems damaged or lost as a result of the ice storm, many producers decided to replace conventional spouts requiring a 7/16 in. (1.11 cm) diameter taphole, with small diameter spouts which utilize a 19/64 in. or 5/16 in. (0.75 cm) diameter taphole, recently introduced for the maple industry. The producers felt the smaller diameter taphole required for the use of the small diameter spout offered a potential for wound reduction even though information regarding performance of the new spout was limited (pers. comm. NENY Maple Producers Assoc.). The interest in the use of the small diameter spout (Figure 1) exhibited by maple producers affected by the 1998 ice storm and encouragement by the maple industry in general for examination of the potential of this new concept prompted the evaluation described in this report.

## THE STUDY AREA

The Uihlein Sugar Maple Research/Extension Field Station of Cornell University located near Lake Placid, New York served as the site for this research. The study site is

located at an elevation of about 2050 ft. (625 m) on a southeasterly aspect with a slope averaging about 7 percent. The soil series is classified as Becket sandy loam, a deep well-drained soil of glacial till origin (SCS USDA Soil Survey of Essex County, New York 1978). The sugar maples used for this study are located in a natural forest stand that has been under a forest management program for over 20 years. Tree age at the study site is approximate 75 years and trees averaged 15.11 in. (38.4 cm) in diameter at breast height and 70 ft (21 m.) in height. Annual syrup production in this site has averaged .28 gal (1.3 L) /tap for the last 10 years (Cornell Univ. unpublished data).

## METHODS

In early winter of 1999, study trees were selected based on current tapping diameter guidelines (Heiligmann and Koelling 1996) to provide 8 tubing lines with 10 taps for each line totaling 80 taps for the study. The tubing lines consisted of Waterloo-Small<sup>1</sup> semi-rigid maple sap collection plastic tubing and fittings throughout the study, and were installed in the winter prior to the 1999 maple production season. Half of the lines were fitted with the recently introduced small diameter spouts and the remaining half of the lines were fitted with conventional spouts. The spout treatments were randomly assigned to lines. Study trees were tapped just prior to first sap flow date for the region using a slow speed power tapper. Tapholes were drilled to a depth of 2 in. (5 cm) for each spout treatment. To reduce the effects of tree variation, the spout treatments assigned to lines for the second year of the study were reversed from that of the first year. For the two years of the sap production phase of the study, sap was collected in 15 gal. (70 L) containers that served as sap collection vessels as well as vacuum chambers. Vacuum was maintained at a minimum of 15 in. (380 mm) Hg at the tap during sapflow trials. Vacuum gauges were installed at each sap collection vessel and vacuum was checked randomly at taps and ends of lines during the duration of the study. The study was designed and installed in a manner for sap to be collected and measured in the collection vessels during daily trials but with an arrangement of valves to allow sap to be transferred into the field station's sap collection system for processing. Following each sap production season, collection vessels were removed from the field, washed with hot water, and reinstalled prior to the following sap production season. Tubing lines for the study remained in place and were washed after each season with a solution consisting of 1 part household bleach in 20 parts water.

Sap flow data were obtained during the 1999 and 2000 sap production seasons. For each daily trial, collection vessels and study lines were activated for vacuum and sap collection at the beginning of each sap flow period and continued throughout the day until nightfall or freezing point, whichever came first. During each sap flow trial period, trial start and stop times, level of vacuum, volume of sap, and sap sugar concentration was recorded for each line. For each sap collection vessel, sap volume was measured to the nearest 0.5 liter and recorded in the field. Sap sugar concentration was determined by collecting a representative sample of sap in a 25 ml vial from each collection vessel and measured with a Reichart Mark II temperature compensating digital refractometer in the field station office.

Taphole closure was measured after the growing season following each sap production season. The width of the taphole (i.e. the distance between the edges of callous tissue forming from annual growth of cambial tissue on the lateral walls of the taphole) was measured to the nearest 0.01 cm using digital calipers. Tapholes were coded by spout

---

<sup>1</sup>No endorsement of product by Cornell University is intended nor implied.

treatment and study year with colored tree marking crayons. Percent closure was determined by calculating the amount of formed callous tissue compared to the diameter of the original taphole (i.e. taphole closure).

A representative sample of trees were felled in the fall of 2001 allowing two complete growing seasons to take place after the second sap production trial year. A section containing the tapholes with adequate wood to encompass the discoloration zones was marked for identification and removed from each sampled tree. The discoloration zone formed laterally and vertically relative to the taphole by spout treatment was determined by dissecting the tapping zone section of the tree. Data analyses were performed with MS EXCEL and MINITAB on a Gateway PC computer.

## RESULTS

During 1999 and 2000, sap volume and sap sugar concentration measurements were collected from a total of twenty-six daily sap flow trials (13 for each year). For the two years, the average sap volume was 2.32 L/tap for the conventional spout treatment, slightly above the 2.20 L/tap for the small diameter spout. Sap sugar concentration averaged 2.0 percent for both treatments over the two-year period.

No significant differences in sap volume or in sap sugar concentration were found in sap collected with the small diameter spout compared with that of the conventional spout.



## **BULK & BOTTLED MAPLE SYRUP FOR SALE**

**(organic, kosher & conventional)**

**The Best Quality  
at The Best Price**

**You get a sample of the syrup you're buying before we deliver.**

**We can deliver to any state with a week's notice.**

**We also offer the possibility of 30-45-60 days to pay  
any order of Bulk and Bottled Maple Syrup.**

**CALL FOR A FREE COPY OF OUR NEW CATALOG**

**For More Information Call Mike**

**1-888-453-2291 • 418-453-2081 • 418-453-3236 Fax**

**Email: [export2002@hotmail.com](mailto:export2002@hotmail.com)**

**2248 Chemin Dublin, Inverness Que., Canada G0S 1K0**

The level of vacuum at the tap averaged 16 in. (410 mm) Hg throughout the study and no differences of maintained vacuum level were observed between lines during flow dates.

After two growing seasons, the faster rate of taphole closure for tapholes fitted with the small diameter spout was highly significant ( $P < 0.001$ ). Following one growing season, taphole closure for tapholes fitted with the small diameter spouts averaged 32.44 percent and 53.27 percent for the 1999 trial and 2000 trial, respectively, compared to 26.51 percent and 39.97 percent for tapholes fitted with conventional spouts. Following two growing seasons taphole closure for the small diameter spouts was 89.64 percent and 80.26 percent for the 1999 and 2000 trials, respectively. For the same two-year period, the rate of taphole closure for the conventional spout treatment was 72.21 percent for 1999 and 67.28 percent for the 2000 trial.

After taphole closure measurements were completed following two complete growing seasons, a representative sample of five trees in the study area were selected and felled to provide an examination of the amount of discoloration associated with each spout treatment. For each tree, the lower section of the bole inclusive of the tapping zone of each spout treatment was removed in the field. The tapping zone for each spout treatment in each of the trees was examined to determine the depth, length and width of discoloration zone. Each discoloration zone was cut into smaller sections by band saw and measured to .01 cm using digital calipers. Calculations were made to account for saw kerf. Of the five trees examined, one tree was eliminated because discoloration zones from wounding prior to the experiment interfered with measurements. For the remaining four sample trees the average amount of discoloration associated with the conventional spout was 25.72 cubic in. (422 cubic cm) while the amount of discoloration for the small diameter spout averaged 11.09 cubic in. (182 cubic cm).

## DISCUSSION AND MANAGEMENT IMPLICATIONS

This study found maple sap volume yield collected under vacuum 15 - 17 in. (380 - 435 mm) Hg from trees fitted with small diameter spouts to be comparable with that of trees tapped with conventional diameter spouts. Sap sugar concentration in sap collected throughout the study indicated no significant differences between the two spout treatments. The trends of sugar concentration by treatment (spout treatments by lines were reversed for the second year of the study) for each year of the study can be attributed to individual tree characteristics. This illustrates the importance of providing for more than one year of field trials for studies related to maple sap flow and also supports the fact that trees maintain their sap sugar concentration relative to one another year after year (Taylor 1956).

The faster rate of taphole closure associated with the tapholes fitted with the small diameter spout provides a positive effect for maple sap production. The shorter period of time for the formation of callous tissue required for taphole closure allows the tree to begin growing new xylem (sapwood) over an existing taphole. The faster rate of taphole closure may be attributed to the smaller diameter of the taphole, thus, less amount of callous must be formed to close the taphole. The fact that less force is required to set the smaller diameter spout in the taphole may result in less compression of cambium and xylem cells adjacent to the taphole allowing a greater number of uninjured cells to respond in the formation of callous tissue.

In addition to reducing the amount of taphole discoloration zone combined with sap volume yield and sap sugar concentration comparable to that with use of the larger diameter conventional spout, the use of the small diameter spout can allow greater ease dur-



ing the tapping process. The use of the smaller diameter spout requires a smaller bit, 5/16 in. (0.79 cm) compared to 7/16 in. (1.11 cm) for the conventional spout, which allows producers to use a drill of less power and, thus, often less weight such as a cordless battery pack drill. The spout can be inserted into the taphole by a combined push and twist of the hand with possibly a slight tap with a light hammer. This allows greater efficiency for one man tapping and inserting the spout and virtually eliminates the possibility of tree damage caused by the splitting of cambium adjacent to the taphole. The reduced effort in the tapping procedure as a result in using a tapping unit of less weight combined with the ease of inserting the spout may also contribute to less fatigue and therefore provide greater operator safety during the tapping process.

The reduced amount of discoloration zone and faster rate of taphole closure associated with use of the small diameter spout might suggest to some producers that current tree tapping diameter guidelines can be modified to allow a greater number of taps per tree diameter class and smaller trees to be tapped. Based on the information presented at this time and the limited number of years of industry application of the small diameter spout, we strongly encourage maple producers to follow the conservative guidelines established for tapping using conventional spouts. Wounding a tree can impart greater potential impact on tree health than removal of a larger amount of sap. More taps in a tree does not provide a guarantee for a proportionally greater amount of sap yield, and research and industry application illustrates that volume yield of sap per taphole can increase when fewer taps placed on a tree are practiced (Koelling and Heiligmann 1996).

Call or  
write for a  
**FREE**  
Catalogue!



All Prices  
in Low, Low  
Canadian  
Dollars

*"Where Quality and Service is a Tradition"*

## ***New & Used Equipment Complete Line of Supplies***

RR #1, Oro Station, Ontario L0L 2E0

Tel: 705-487-3331 • Fax: 705-487-0460

Email: [sales@atkinsonmaple.com](mailto:sales@atkinsonmaple.com)

*A Division of Davtech Industries Ltd.*

**"WE SHIP DAILY"**

## ACKNOWLEDGEMENTS

Funding from Cornell University - the New York College of Agriculture and Life Sciences, and the New York Department of Environmental Conservation Division of Lands and Forests, and materials for this study supplied in part by Waterloo-Small Inc. USA are greatly appreciated. No endorsement of product is intended nor implied by Cornell University. The assistance for field layout and data collection provided by Christopher Moquin, Jeff Murphy, and Toby Burke is also acknowledged.

## LITERATURE CITED

- Connelly, N.A., T. Brown, L.J. Staats, and P.J. Smallidge. 1999. Educational needs of northern New York maple producers as they recover from the January 1998 Ice Storm. Cornell University HDRU Series no. 99-7. 26p.
- Coons, C.F. 1987. Sugar bush management for maple producers. Ontario Ministry of Natural Resources. 48p.
- Kelley, J.W. and L.J. Staats. 1989. High-vacuum pumping effects on maple sap sugar yield. North. J. Appl. For. 6:126-129.
- Koelling, M.R and R.B Helligmann. 1996. The Maple Producers Manual. Ohio State Univer. Extension. Bull. 856. 178p.
- Jones, C.H., A.W. Edson, and W.J. Morse. 1903. The maple sap flow. Univ. Vt. Agric. Exp. Stn. Bull. 103. Burlington.
- Morrow, R.R. and C.B. Gibbs. 1969. Vacuum pumping doubles sap yield on flat land. USDA For. Serv. Res. Note NE-91.
- Robbins, P.W. 1965. Influence of tapping techniques on maple sap yields. Mich State Univ. Agric. Exp. Stn. Res. Rep. 28, East Lansing.
- Rye, A.H. and R.S. Walters. 1977. Maple spout modification shows no advantage. Natl. Maple Syrup Dig. 16(1):17-19.
- Staats, L.J. and J.W. Kelley. 1996. Field Evaluation of the IPL VacuSpout for maple sap collection. North. J. of Appl. For. 13(4):171-174.
- Staats, L.J. 2001. The 1998 Ice Storm: Its impact and recovery program in New York. Proceedings NY Soc. of Am For Ice Storm symposium Jan 29, 1999. Cortland, NY, pp15-19.
- Taylor, J.H. 1956. Variation in sugar content of maple sap. Vt. Agric. Exp. Stn. Bull. 587. 39p.
- Walters, R.S. 1978. Tapholes drilled into frozen sugar maple close slowly. USFS Res. Note NE-265. 4p.
- Walters, R.S. and H.W. Yawney. 1982. Sugar maple tapholes In: Sugar maple research: Sap production, processing, and marketing of maple syrup. USDA For. Serv. Gen. Tech. Report NE-72. 109p.

### CLUTE'S MAPLE PRODUCTS

*\* Leader and G.H. Grimm  
Equipment & Supplies*



*\*Bacon Jugs*



Lane & Kathy Clute  
405 Clute Road  
Naples, NY 14512  
(585) 374-6371

### SUGA COUNTRY PRODUCTS

VASSALBORO, MAINE

*Your one-stop  
maple sugaring supply store*

DEALER FOR:  
DG/USA

Algier Evaporator Company  
and Waterloo/Small

E-MAIL: SUGGS@PSOUTH.NET  
TEL: 207-923-3355

## SUGARING

Winter days start growing longer,  
And the sun's a little stronger,  
Then the ground begins to thaw and the mud begins to flow.

Sugar Season! Yes it's true!  
Hank announces to his crew,  
Grab some buckets! Haul those lines! Get your butts out in the snow!

Find the maples drill a hole,  
No! that's a service pole!  
What the hell, all that's upright needs a tap . . .

Soon the nectars flowing,  
The evaporators glowing,  
Sweet aromas fill the air, burning pine and boiling sap.

Ain't no time for sleeping,  
Those trees just keep on weeping,  
Hauling buckets til our knuckles dragging furrows in the ground.

Buds are popping, peepers sing,  
We the harbingers of spring,  
The sugar house recesses till another year come round.

— John Farr



## MAPLE SYRUP AND SUGAR LABELS

Show the quality, increase the value of your products with quality customized labels

Choose from 4 colorful designs and 2 shapes,  
Nutrition facts, bar code labels,  
gift tags & more...  
Order quantities of 500 and up.

For more information and a free brochure,  
contact Diane at:

**Techni-Flex, Inc.®**

P.O. Box 1075 • Appleton, WI 54912  
Phone (920) 757-0155 • Fax (920) 757-0160  
e-mail - [diane@techni-flex.com](mailto:diane@techni-flex.com)

WE ACCEPT



# LEADER EVAPORATOR CO.

*Tap Into It!!!*

25 Stowell Street - St. Albans, VT 05478 - 802-524-4966 - Fax: 527-0144

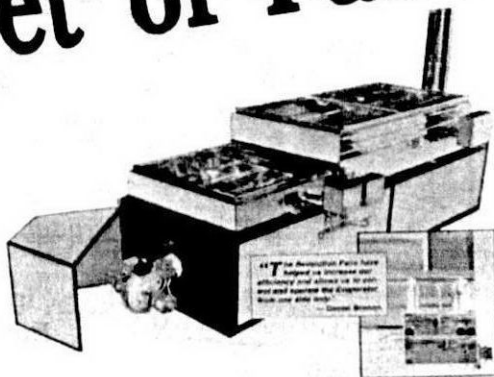
## The REVOLUTION Welded Set of Pans

Reverse the Flow without  
changing sides.

Tig Welded 20ga. Bright S/S

NO MESSY PAN CHANGES

All S/S Fittings, and Valves



**Made in the USA** by the industries leader in quality, service,  
and customer satisfaction.

Leader Evaporator: Blazing the trail of the evaporator revolution!

[www.LeaderEvaporator.com](http://www.LeaderEvaporator.com)

# COMING EVENTS

---

## 10th ANNUAL MAPLE FALL FEST

September 13 - 14

For brochure contact:

sharonkirn@marshfieldchamber.com or marshfieldchamber.com/visitors

---

## 2003 PENNSYLVANIA MAPLE TOUR

October 3 and 4

Potter County

For more information contact:

Laura Nelson — (814) 848-7950 or Jim Tice — (570) 549-5257

ticejd@quik.com

---

## NAMSC AND IMSI ANNUAL MEETING

October 22-25, 2003

Truro, Nova Scotia, Canada

For more information contact:

Doug Kirby, 60 Roosevelt Ave., Truro, NS, Canada B2N 1B6

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

---

## NEW YORK STATE MAPLE PRODUCERS CONFERENCE

January 9 and 10, 2004

Vernon-Verona-Sherrill Central School, Verona, NY

For more information contact:

Keith Schiebel at (315) 829-2520

or email: kschiebel@vvs-csd-high.moric.org

---



### Hall Farms Maple Products

Full line of  
(New & Used)  
maple  
sugaring  
equipment in  
stock.

Authorized Dealers For:

- \*Waterloo/Small
- \*Hillside Plastics
- \*Marland
- \*The Bacon Jug Co.

(207) 646-2862 or  
1-800-646-4367  
Fax: (207) 646-4498

Rodney and Tina Hall  
U.S. Route 2  
East Otisfield, ME 04227

[WWW.HALLFARMS.COM](http://WWW.HALLFARMS.COM)

### EVAPORATORS & SUPPLIES

*New & Used*

### LAMB TUBING & FITTINGS

**ORDER EARLY & SAVE**

**ROGER C. SAGE**

444 SAGE ROAD

WARSAW, N.Y. 14569

Tel: 716-786-5684

## CLASSIFIED

**FOR SALE:** 4' X 12' S.S. drop flue complete hood preheater. 6' x 9' SS hood flue pan. 6' x 7' SS syrup pan hood. Vac pump air blow 3 H.P. electric. Vac releaser with moisture trap. Several S.S. storage tanks. 300 to 1200 gal. S.S. round bottom storage tank 25 barrel. Gas finisher S.S. with stand. Used tubing. Used mainline. Markland auto drawoff. Tappers, Mac \$100, Tanaka \$225, Ekco \$225. 500 gal. S.S. Vac. tank. Wolcott (716) 786-3893.

**FOR SALE:** 7" short stack 3 section filter press with electric motor driven pump. Like new, \$730.00. In Minnesota (218) 835-7719.

**FOR SALE:** Grimm Lightning, 2' x 4' evaporator, SS pans, only used three seasons, \$1,500. Windsor, NY (607) 655-3048.

**FOR SALE:** Leader 3' x 10' welded SS pans used 5 seasons, includes Inferno arch with blower, stack and valves, EC. Also, like-new Marcland with dual valves and probes, like-new Grimm 7" filter press. Excellent prices. (518) 893-7832.

**FOR SALE:** or will trade for some light syrup (30 gal.). 2 new evaporators, all stainless— 1 = 2 1x2' x 8' w/SS base stack. 1 = 3' x 8' w/SS stack. Other items also. (413) 623-6021.

**WANTED:** Used R.O. of 500-600 GPH in good condition. (724) 484-7988.

*Unlimited sizes and print colors.*

## **CROWN LABELS**

*Check your Maple Labels for our  
Pre-Season Special*

Save 10%-15% on all orders placed by November 30th

The more you BUY — The more you SAVE.

250-2000 Labels — Save 10% • 3,000-10,000 Labels — Save 15%

*Call, Write, Fax or email for full color Samples and Prices for*  
**Syrup • Cream • Sugar • Candy • Novelties • Tea**



**WM. L. CHALMER**



P.O. Box 21545 or 2121 S. Green Road, Cleveland, OH 44121

800/847-6016 • 216/291-4897 • Fax 216/291-4897 • Email: blade@stratos.net

OUR 43RD YEAR FURNISHING LABELS FOR MAPLE PRODUCERS IN THE U.S. AND CANADA

# SUBSCRIPTION FORM

THE MAJORITY OF THE STATE ASSOCIATIONS INCLUDE  
THE MAPLE SYRUP DIGEST WITH YOUR DUES PAYMENT.  
PLEASE CHECK WITH YOUR ASSOCIATION  
TO SEE IF YOU WILL AUTOMATICALLY  
RECEIVE THE DIGEST WHEN YOU PAY YOUR DUES.

I would like to subscribe to the MAPLE SYRUP DIGEST

USA ( ) 1 Year \$5.00

CANADA ( ) 1 Year \$7.00

PLEASE REMIT IN US FUNDS

This is a: ( ) new ( ) renewal subscription

Name \_\_\_\_\_

Address \_\_\_\_\_

Make checks payable to Maple Syrup Digest and Mail to:

**MAPLE SYRUP DIGEST**

**PO BOX 240**

**CANTERBURY, NH 03224**

**BE SURE TO SEND US YOUR CHANGE OF ADDRESS  
THE POST OFFICE *WILL NOT* FORWARD BULK MAIL!**

DEADLINE

FOR NEXT

ISSUE IS

NOVEMBER 1, 2003

IF YOUR  
MAILING LABEL  
READS

**SO03**

(Subscription, October 2003)

THIS IS  
YOUR LAST PAID ISSUE

*Please renew your subscription*

# Mission Accomplished



*Conversion to the new Bacon Jug closure system is complete!*



The Bacon Jug Company is pleased to announce the new cap is now available on both cream and classic color Bacon Jugs in size Pint through Gallon.

Many of you have either tried this new cap in your own operation or tried a sample at one of the recent Maple Tours. The consensus is that this system makes a secure tamper-evident closure of the Bacon Jug an easy task. The new cap goes on with ease. Call for more information!



**Congratulations to the following Bacon Jug Winners:**

New York Maple Tour  
~Frank Walsh~  
Vermont Maplerama  
~Johnnye Burt~

**The Bacon Jug Company**

(a division of Gamber Container, Inc.)  
46 N. Littleton Rd • Littleton, NH 03561  
(603) 444-1050 • (603) 444-6659 fax  
[www.mclures.com](http://www.mclures.com) • [info@mclures.com](mailto:info@mclures.com)