Maple Syrup Digest

VOL. 16A, NO. 3 October 2004

Maple Syrup Digest
PO Box 240
Canterbury, NH 03224

Return Service Requested

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

sugarhill®

CONTAINERS

Contact us for the Sugarhill dealer in your area.

Available in standard and metric sizes.

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

"The Plastic Bottle People"

North American Maple Syrup Council, Inc.
RESEARCH FUND

Maple Research in Progress

These are a few of the current research projects that have received funding from the NAMSC-Research Fund over the past year...

UVM PROCTOR MAPLE RESEARCH CENTER

- Characterizing "Metabolism" Off-Flavors in Maple Syrup
- High Vacuum Effects on Wounding in Sugar Maple
- DNA Fingerprinting for Sap Sweetness in Sugar Maple
- Developing Sugar Profiles of Maple Syrup for use in Detecting the Use of Decolorizing Agents

ONTARIO MINISTRY OF AGRICULTURE

- Use of Defoamers in the Maple Industry
- Evaluation of Sap Filters

CORNELL UNIVERSITY,

- Controlling Microorganisms in Sap Systems

Your voluntary donations of "A PENNY FOR EVERY CONTAINER YOU FILL" helps continue research in tree health, insect infestation, syrup production, product quality, packaging, marketing, syrup adulteration and a host of other concerns vital to the maple industry. Donations can be made through your plastic, glass or metal container suppliers or you can send your contributions direct to us.

Our thanks to all those who support the maple research fund and we invite those not yet participating to join us in investing in 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
Michael A. Girard, Treasurer, 352 Firetown Road, Simsbury, CT 06070
Phone 860 658-5790, Email: mgirard@simscroft.com

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

ROGER SAGE, President
4449 Sage Road, Warsaw, NY 14569
585-786-5684

ELIZABETH COLLINS, Vice President
969 Manvel Street, St. Paul, MN 55114
651-645-1598

JOE POLAK, Secretary-Treasurer
W 1450 Hwy. C, Merrill, WI 54452
715-536-7251

DIRECTORS

Raymond Kasulaitis 860-379-8787
69 Goose Green Rd., Barkhamsted, CT 06063
Chris Rahe. 812-986-2493
6735 Mudd Road, Poland, IN 47868
Robert S. Smith. 207-474-3380
24 Bennett Ave., Skowhegan, ME 04976
Tom McCrumm 413-628-3268
755 Watson-Spruce Crnr Rd., Ashfield MA 01330
Jean Maday 517-646-9967
570E. Main, Box 245, Potterville, MI 48876
Terry Stanley 320-943-2580
2981 No. Lake Miltona, Miltona, MN 56354
Roger St.-Amand 506-273-2179
500 California Sett Road,
California Sett., NB E7J 2N3
Hank Peterson. 603-432-8427
28 Peabody ROW, Londonderry, NH 03053
Avard Bentley 902-548-2973
12 Valley Rd.,Westchester, N.S. B0M 2A0
Dick Schorr 513-489-3184
12041 Snider Rd., Cincinnati, OH 45249
Bill Robinson 519-529-7857
RR2, South St., Auburn, Ont. N0M 1E0
Burton Kimball 814-739-2720
9691 Kimball Rd., Wattsburg, PA 16442
Luc Lussier 819-362-3241
2100 St. Laurent, Plessisville, Que. G6L 2Y8
Douglas Rose 802-259-3016
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: Sweet's Sugarhouse, Newbury, New Hampshire.

GREETINGS FROM YOUR PRESIDENT

The fast approaching joint meeting of the North American Maple Council and the International Maple Institute combined with the NY State Summer Tour gives us a moment to reflect on the 2004 maple season. It appears to have been a significant improvement over last year with better quality and much better maple flavor. There still seems to be a surplus of maple syrup. With that in mind, we must continue to improve our overall marketing efforts. We do need to applaud the many people, who worked at the numerous fairs and festivals, passing out samples, and answering the consumer's many questions, as well as selling maple products.

The many versions of maple Sunday, maple weekend, and maple open houses are proving to be a great promotional tool for our maple industry. This is the first opportunity for many consumers to learn about maple production and maple products. Once they see what is involved in producing maple syrup and the various products available, the consumer is likely to become a steady customer.

We need to take a serious look at the proposed standardization of grades making sure that we do not confuse the consumers. If the consumer is fond of a certain grade of syrup, we need to make sure he is aware of what he is buying. It is a necessity that we provide ongoing education to our consumers as our industry progresses.

Bring your thoughts and ideas to the combined meetings at Roaring Brook Conference Center October 17th - 20th 2004. One of your ideas might contribute to better organization across the maple industry.

Hopefully our inclement weather is behind us and we will have some pleasanter conditions to enjoy the splendor of the Lake George area. We are looking forward to joining all of you for the meetings and at the social gatherings before you have to go home to prepare for your next maple season.

Sincerely, Roger C. Sage

IMSI NEWS

By Larry Myott
Executive Secretary

New York International Meetings Soon To Meet

The annual meetings of the two international maple organizations are just around the corner. The International Maple Syrup Institute (IMSI and the North American Maple Syrup Council (NAMSC) will be meeting in Lake George, New York on October 17 - 20. These meetings are being hosted by the Upper Hudson Maple Producers of New York, they have invited us all to participate in this "maple event of the year."

The meeting is being co-sponsored by the IMSI and maple businesses from around the maple world. There will be tours, seminars, scientific presentations, special meal functions, a large trade show and much more. For me, it is a very busy time trying to attend all the sessions and keep the activities of the IMSI on track. There is also a meeting of all the Extension and government maple folks, including researchers. That is always the best for me, I get to catch up on the educational activities and research in all the maple states and provinces. I am looking forward to hearing about the grand opening of Centre Acer, the newest maple research station in Quebec.

Each year a local host committee gets the opportunity to host the international meetings, it takes at least two years of very hard work and a lot of committee meetings to put on these sessions. It also takes a lot of money to make it all happen. Since the 2000 session in Vermont, the IMSI has been a sponsor of the joint meetings. The Vermont sessions were also co-sponsored by the NAMSC and the Vermont Maple Sugarmaker's Association. This year's sessions are also expensive to develop and host, the IMSI was glad to once again co-sponsor, unfortunately the NAMSC board did not respond to the request and the New York Sugarmakers Association declined the opportunity.

To make these sessions successful it takes a lot of hard work and efforts on the parts of many volunteers, I feel that it is only right that the state association and NAMSC be a committed partner in this program development. $1000 from each of them would have been a small token of that commitment and even encouragement, perhaps they will reconsider.

The NAMSC board says they don't have any money to be able to sponsor, I disagree with that statement. Research is the only financial commitment that the NAMSC has and they raise money for that research. This money could very legitimately be used for co-sponsorship since the international sessions are used to present research findings to the members of the organizations. All of the researchers are asked to present papers, or scientific posters, about their research. Researchers are not offered any financial incentives to attend and present, certainly the NAMSC could come up with $1000 to co-sponsor the forum that presents the research. Perhaps they will take action in their general session at Lake George.

As we prepare to attend the 2004 international sessions, the Quebec host committee for 2005 is working to put on memorable sessions in the Province of Quebec next October. Details will be announced in New York, but the facility has been announced, it is in Three Rivers, QC.

(For information on the IMSI, call or write Larry Myott, IMSI Executive Secretary, 5014 Route Seven, Ferrisburgh, VT 05456. Email: Larry.Myott@uvm.edu)

FIRE DESTROYS MICHIGAN MAPLE SUPPLY WAREHOUSE

By Betsy Carls
Reprinted from the MMSA Newsletter

We are sorry to have to report the terrible news of a fire at Sugar Bush Supplies Company in Mason Michigan, on Friday, July 23rd.

The Company is owned and operated by Geroge Fogel and his children, Rick Fogle and Mary Dogle Douglass.

The Fogle's had just unloaded a full truckload of Bacon Jugs into the warehouse and closed for the day at noon. At 12:40 pm the last employee had left the building and there was no sign that anything was wrong. Some of the family members were in other buildings on the property when they noticed smoke coming out of the warehouse about 1 pm/ Family and friends scrambled to retrieve important document, computers and inventory from the building.

Shortly after the firefighters arrived, the steel warehouse roof collapsed from the intense blaze. It took about 30 firefighters from Dansville, Delhi Township, Mason, Meridian Township and Williamston to keep the fire from spreading to nearby buildings on the property. The nearest fire hydrant is about a mile north of the business, so firefighters were forced to transport water in tankers.

The cause is undetermined as yet, but some type of electrical is suspected. It was determined that the fire started in the upstairs storage of the warehouse. The building and all warehouse inventory is a total loss, but fortunately they were able to salvage some records, computers and showroom stock. Fortunately, no one was in the warehouse when the fire broke out, sdo there weren't any injuries.

Nothing can keep the Fogle's from conducting business. Rick contacted one of their customers that has a construction company at 8 am on Saturday and by 11 am there was a trailer in place and their office was fully functioning.

They are doing their best to take care of their customers needs as best as possible, but have little stock on hand, except for glass bottles. Fortunately, they store their glass bottles in another building and thus have an ample supply. For customers in need of supplies, they are drop shipping directly from the manufacturer or getting supplies from other suppliers in the area when possible.

They are in the process of rebuilding and hope to be fully operational by late fall. They appreciate everyone's calls of concern, patience and support while they work through this difficult situation.

To our Maple Friends, Customers and Colleagues

We wish to thank you for your thoughts and phone calls of concern following the July 23rd fire that destroyed our office and warehouse. We are undertaking the tedious process of salvage, clean-up and re-building and hope to have a new office and warehouse completed and fully stocked by late fall.

In the meantime, we will continue to serve you to the best of our ability and look forward to many more years of working in and with the maple community.

The Fogle Family and the staff of Sugar Bush Supplies Co.

SUGAR MAPLE HEALTH AND MANAGEMENT

By Keith Ruble, Forestry Consultant and Director, Vigo County Parks Department in Indiana

Most of us understand how to tap trees, gather sap and produce maple syrup. Yet, one of the most important and least thought about tasks of a sugar bush owner is maintaining the health of the sugar maples. To do that effectively, the majority of us can greatly benefit from the help of a professional forester.

In Indiana, there are private consultant foresters, foresters who work for industry and state foresters. Of these three, the private and state foresters are most available to help with your woodland needs. While maple operations are not the major focus for these foresters, they are trained in proven forest management techniques including forest Best Management Practices (BPMs).

Utilizing these practices in sugar bush management can pay big dividends. However, the person in charge of a sugar woods must be aware of the unique needs of the syrup maker and balance them with best management practices.

For example, the typical sugar maker finds that the more concentrated the maple trees are the better. All maple in one spot is preferred due to the cost and ease of setting up a sap operation. However, forest ecologists will tell you that diseases and insects can cause problems quicker in this type of culture (monoculture) verses a mixed tree stand. Therefore it is a good practice to allow some other species of better quality to grow in your woods along with the sugar maple.

Thus, the sustainability of a sugar maple operation depends greatly upon wise forest management decisions. Let's examine two practices that greatly influence the future of a sugar bush.

When and How Should a Maple Stand Be Thinned?

In a sugar bush that is being tapped, the removal of trees should include those with narrow crowns, trees with co-dominant stems, or genetically inferior trees that compete with the crowns of superior trees.

Tree species other than maple that are low grade cull trees with overtopping crowns should be cut down to make regeneration openings or to provide more light to sugar maples that are near by.

In some cases, when sufficient numbers of species other than maple are mature an improvement harvest may be in order. To remove a tree, directional felling, or felling a tree in a direction away from your sugar maple tree, is required to avoid damage. All cutting and removal of logs should be planned to prevent standing tree damage, soil compaction and erosion.

This is where Best Management Practices come in. If you are thinking about having a harvest, always hire a professional forester to mark the trees that need to be harvested and have the forester conduct a closed bid sale. The forester will provide both you and the logging company a timber sale contract that will require

the logging company to perform logging BMPs and require them to have a minimum of one million dollars of liability insurance and proof of workmen's compensation. This type of sale will provide you with the true market value of your trees.

In a woods being managed for future sap production, maple trees in the 2" to 10" diameter size should be selected to serve as potential future crop trees. Select the tallest maple trees with a straight, single dominant stem and mark them with a surveyor's tape. During the normal sap season, check the sugar content of these future trees with a sap refractometer. The sweetness should be checked at different times and days if possible during the sap season. Make note of the young trees with the sweetest sap.

Knowing when and to what extent to thin maple and other tree species is also important.

Small trees less than 8" can be cut down safely. Trees to be thinned that are larger than 8" can be cut down or double-girdled at least 1" in depth with a chain saw. Double-girdling a tree will ensure death and, if it is left standing, it will do little damage to neighboring trees while it sheds its limbs in the next few years. The end result of proper thinning will give future crop trees room to expand their crowns. Trees with expanded crowns will provide more sap and normally yield a higher percent of sugar.

Do not use any forest herbicide because you are producing a food product.

Where Should Roads and Trails be Made?

During part of the maple season we work in the woods when the woods is in its most fragile condition. When the woods thaws out from the winter's deep freeze the woods floor turns to soft wet soil, or what some call the mud season. Under these conditions, severe damage can be done.

If you operate any motorized or horse drawn equipment to gather sap buckets or bags, haul sap or move firewood, the haul roads need to be placed in areas that will minimize tree root damage and soil compaction.

Soil compaction and root damage from heavy equipment can severely stress your trees. Water and air movement in the soil will be severely reduced if roads are not planned and constructed properly. Haul roads should be planned on a contour with water bars that divert runoff into vegetated areas and not into channels. The use of culverts and #2 white-rock should be used in areas that are normally wet during the sap season. This rock will support heavy equipment and prevent rutting. After the sugar season, ruts and berms should be smoothed and stabilized when soil conditions are suitable for grading.

Observing your trees in the summer will provide valuable information about the health of your trees. Looking up at each tree's crown, studying the leaf density and light penetration will indicate the tree's condition of health. If a tree has dense leaves and letting a small percentage of light through, the tree is usually healthy. A tree with a thin leaf cover that is letting in a large percentage of light could be under stress. That stress may very well be the result of soil compaction and disturbance from human activity.

Familiarity with best management practices can help you make better management decisions in the future.

I have visited sugar bushes from Minnesota to New Hampshire. My observations suggest that most sugarbush owners do not know how to properly manage their sugar maple trees for a long time sustainable operation. In Indiana, the Division of Forestry of the Indiana Department of Natural Resources can provide you with the name of a professional forester in your area. This forester can help you develop a management plan and can help you identify the resources and information to carry out the improvements prescribed in the management plan.

The Division of Forestry may have cost sharing available for woodland improvement. Under the new farm Bill, the Department of Forestry is administering the Forest Land Improvement Program (FLEP). This program will pay 75% of the cost to make a management plan and perform the work needed.

Besides making a little money from our maple sugar operations, the pure enjoyment we receive from this late winter and early spring tradition is worth preserving.

As we pass this tradition on to young people we need to include the importance of sustainable forest practices.

Keith Ruble has been actively managing the sugar bush at Prairie Creek for nearly two decades.

Keith is happy to talk with IMSA members who have questions about sugar bush management. He can be reached at 812-462-3392 or 812-898-2315.

NEW ENGLAND MAPLE GRADING SCHOOL

December 8 to 10, 2004

Lancaster, New Hampshire

Attention: Maple Producers, Bulk Syrup Buyers and Contest Judges

Course combines a strong scientific base with intensive hands-on exercises to help you learn how to accurately grade or judge maple products. Enrollment is limited to 30 participants.

For additional information or to obtain a registration packet telephone 603-527-5475 or email sumner.dole@unh.edu.

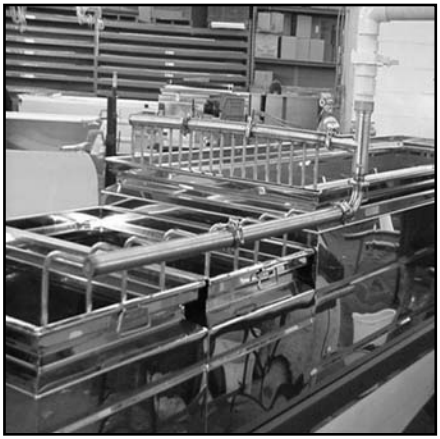
The New England Maple Grading School is sponsored by the University of Maine Cooperative Extension, University of New Hampshire Cooperative Extension and the Vermont Agency of Agriculture, Food and Markets.

A fee is charged for this Extension program to cover costs. A limited number of scholarships are available to individuals unable to pay. For persons with disabilities requiring special accommodations, please contact Sumner Dole at 603-527-5475 within 30 days so proper consideration may be given to the request.

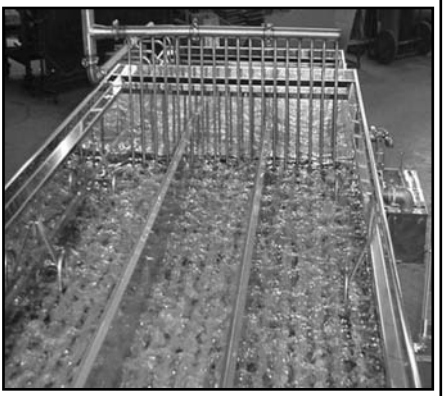
UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations and prohibits discrimination in all its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, veteran's marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game, U.S. Dept. of Agriculture and U.S. Fish and Wildlife Service cooperating.

D.G. USA, INC.
IS NOW ACCEPTING ORDERS
FOR THE

NEW DOMINION & GRIMM
AIR INJECTOR
'BUBBLER"



WILL CUSTOMIZE TO FIT ANY BRAND EVAPORATOR PAN



CALL 802-893-3487
FOR PRICING OR
TO PLACE AN ORDER
TODAY!

D.G. USA, INC.
164 YANKEE PARK RD.
FAIRFAX, VERMONT 05454

802-893-3487

802-524-9643 FAX

NEW GLASS CONTAINERS
ALSO AVAILABLE
TODAY!

2005 NEW YORK STATE MAPLE TOUR SCHEDULED IN WESTERN NEW YORK

The 2005 New York State Maple Tour is scheduled to take place July 17, 18 and 19, 2005 in Western New York. The Batavia Holiday Inn, just off Thruway Rt. 90 in the city of Batavia will be the host site for the tour. Stops include Maple Sugar Houses in Genesee, Orleans & Wyoming counties. The tour includes a trade show of maple equipment, supplies and related organizations. The Maple Tour is a combined effort of the New York State, Western New York and Wyoming County Maple Producers Associations, Cornell University and the County Cornell Cooperative Extension Associations. Registration materials and detailed tour information will be available in the near future. Plan now to attend in July of 2005. Questions contact Greg Zimpfer at 585-591-1190 or Stephen Childs at 585-786-2251.

PRESERVE LEAVES WITH GLYCERINE AND WATER

You will need: a variety of colorful fall leaves, newspaper, lightweight hammer, large jar, glycerine (available at a drug store) and hot water.

Preserve the beauty of the fall leaves in the way professional florists do! It's easy enough for even the youngest child in the family.

Take a walk together when the leaves are at the height of color and talk about the changing seasons. As you walk, collect the prettiest leaves and small leafy branches you can find. When you return home, spread them out on a newspaper-covered surface. Break apart the ends of the branches or stems by pounding with a lightweight hammer (this will allow the stems to absorb water). Then stir together in a jar one part glycerine and three parts hot water. Stick the branches and leaves in the mixture and set the jar on your table as a pretty fall centerpiece. When the leaves have become soft and pliable, you may remove them from the glycerine and water mixture and use them in floral decorations or on a wreath. They will stay pliable indefinitely.

ASIAN LONGHORNED BEETLE CARDS

By Tom McCrumm

For many years I have been inserting one of the existing ALB cards into the handle of every jug of syrup that I ship out via mail order. My thinking is that we need to get these cards and info. on ALB to as many people scattered all across the country that we can. All the past outbreaks of ALB have not been discovered by entomologists, but rather by average citizens. What better way to reach millions of average citizens who care about maple trees than to target maple syrup consumers.

This year I decided to write a grant proposal for this project and search for possible state or national funding. Eventually my efforts got me in contact with Don Tobi and Margaret Skinner at UVM. They both thought this to be an excellent concept for outreach and education, and indicated that possible funding might be available through a federal funding program. Don worked towards obtaining funding, and Margaret and I worked together to design the card so that it would be most effective when in the hands of a maple syrup consumer. I have accepted the responsibility to be the contact person and outreach person for the maple industry.

This new ALB card is targeted directly at people who purchase maple syrup, with a cover photo of a "typical" sugaring scene: a maple tree in the snow with buckets hanging on it. The title of the card says; "Help Save Our Maple Trees". It is intended to catch the eye and the concern of people who love pure maple syrup. Inside the card, which opens in book format, it tells consumers that "You can help maple syrup producers stop this beetle".

The text of the card explains how this insect threatens the maple resource in North America, how to identify it, and who to notify if one is found. The back of the card has a life size photo of the ALB.

My goal is to have every maple producer who ships syrup via mail order, include one of these free cards into the handle of every can or jug of syrup that is shipped. Those producers who have a retail outlet can do the same, or just have them available for customers to pick up. In order to get these cards to maple producers, I will need the help of producers associations, extension personnel and educators.

The cards are available for free from the University of Vermont Entomology Research Laboratory 802-656-5434, or from me at the Massachusetts Maple Producers Association 413-628-3268 or 413-628-3912. Please do all that you can to promote the distribution and use of these cards, the future of our industry may depend on it!

Front of card

Help Save Our Maple Trees!

Rear of card

Look for the Asian Longhorned Beetle!

Life Size

Inside of card

PEST ALERT FOR MAPLE TREES!

A Threat to Maple Syrup!

Maple syrup is made from sap of the beautiful sugar maple tree. The Asian Longhorned Beetle is a new exotic pest in the U.S. and Canada that attacks and kills maple trees and other hardwoods. It has been found in and around New York City; Jersey City, NJ; Chicago, IL; and Toronto, Canada.

This insect threatens maple trees all over the U.S. and Canada. It must be eradicated now before it spreads.

LOOK FOR THESE SIGNS:

- **Adult beetles** are large (3/4 - 1 1/4 in. long) with very long black and white-banded antennae. The body is black with white spots. They can be seen from June to November. A picture of the beetle is on the back.
- **Large round holes** (1/2 in. diameter) on the tree trunk, branches and exposed roots. Adults exit from these holes.
- **Large piles of coarse sawdust** around the base of trees or where branches meet the main trunk.

You Can Help Maple Syrup Producers STOP THIS BEETLE!

Early detection is critical. If you see this beetle or notice trees with signs of damage, PLEASE...

- Note the date and location where you found the beetle or damaged tree.
- Capture the beetle in a plastic jar and place it in the freezer to kill it.
- IMMEDIATELY report the information to your local state forestry department or USDA office.

ALB contact numbers for your state are available on this website:

http://www.uvm.edu/albeetle

or call the Vermont ALB Hotline: (802) 656-5434

FERTILIZATION OF SUGARBUSHES PART I. PHYSIOLOGICAL EFFECTS

Timothy Perkins, Timothy Wilmot, and Marla Zando
Proctor Maple Research Center
University of Vermont, Underhill Ctr., Vermont 05490

BACKGROUND

Liming and fertilization have long been used in agricultural crop production. Although some work has been conducted investigating the effects of fertilization on the growth of trees, primarily for timber production, and generally on sites with known deficiencies, relatively little effort has been focused on crop tree management, and especially on the use of fertilization as a tool in maple sugarbush management.

During the 1980's and 1990's, researchers examined whether maple decline symptoms could be ameliorated by liming and fertilization of maple stands. Studies at the UVM Proctor Maple Research Center (Wilmot et al. 1995, 1996, Liu et al.1997) and elsewhere (Ouimet and Fortin 1992, Long et al. 1997, Horsley et al. 1999, Moore et al. 2000) showed that soil nutrition strongly affected tree vigor and growth of mature sugar maple. A recent survey of maple nutrition in Vermont (Wilmot 2002) found that soil and foliar calcium levels were positively correlated with diameter growth. More recent work conducted in Ontario after the January 1998 ice storm was aimed at improving health and survival of storm damaged maple trees (Lautenschlager et al. 2003). Finally, research underway at the University of Monkton (New Brunswick) shows some promise in improving sugar production by fertilization (Barry and Robichaud 1996).

The goal of this project was to examine the effects of liming and fertilization on tree physiology, growth and sugar production of a moderately fertile maple stand. In this first report, we describe, in general terms, the study area, treatments, and results of liming and fertilization on tree physiology and growth. This report is not intended to be a comprehensive discussion of all the changes observed, but rather is meant to indicate some of the more important aspects of fertilization on maple tree physiology and function as they relate to health, vigor, and growth of trees. Subsequent reports will describe the effects of liming and fertilization on sugar production and regeneration of sugar maple.

STUDY AREA AND FERTILIZATION TREATMENT

The primary study site (Clark) was adjacent to the Proctor Maple Research Center in Underhill Center, Vermont with a western exposure on the slope of Mount Mansfield in the Green Mountain foothills at approximately 1350 ft. elevation. The site was a former sugarbush that had been abandoned several decades ago. While the majority of the stand was comprised of sugar maple, some yellow birch, beech, and hemlock also occupied the site. The majority of

trees were mature and visibly healthy, with > 75% intact crowns.

Ten irregular plots consisting of 10-14 taps each were delineated within the study area and randomly assigned to one of five treatment groups, with two replicate plots per treatment. A buffer strip of varying width encircled each plot. Treatments consisted of: 1) control plots (no fertilization), 2) a commercial 10:10:10 NPK (nitrogen, phosphorus, potassium) at a rate of 270 lbs/acre, 3) a cation mix, consisting of potassium sulfate, calcitic lime, and Epsom salt (designed to supply the soil with potassium, calcium and magnesium) at combined rate of 400 lbs/acre, 4) cations + 10:10:10 at the rates given above, and 5) cations plus supplemental liming at 3000 lbs/acre. All treatments were applied in May 1999 by hand as a single dose spread evenly throughout the plots.

A second study site was set up in the PMRC Progeny plantation for additional studies. These trees were planted in 1960, and are currently pole-sized. The site is fairly shallow and droughty. Ten 20 ft wide plots were laid out parallel to the slope, with 15 ft buffer strips between plots. Four treatments were set up in May 1998. These were: 1) control plots (no fertilization), 2) lime at 3000 lbs/acre, 3) lime at 3000 lbs/acre + 10:10:10 at 270 lbs/acre , and 4) lime at 3000 lbs/acre + manure at 1600 bushels/acre.

METHODS

Foliage was collected from sun leaves in the upper half of the crowns of five dominant or codominant trees within each treatment plot on two occasions (June and August) during the growing season of 2001. Soil samples were obtained using a soil corer in October/November 2001. For each plot, five soil samples were taken from the Oa horizon (depth of approximately 1 inch) and bulked and one sample was taken from the A/B horizon (depth of approximately 5 inches).

Several measures were taken to assess the effects of treatment on tree physiology. Chlorophyll content was determined using a Minolta SPAD502 chlorophyll content meter. Dark-adapted chlorophyll fluorescence was determined using an Opti-Sciences OS-FL1 fluorometer. Both chlorophyll content and fluorescence are indicators of the efficiency at which trees can capture solar energy and convert it into sugars, and are typically affected by the nutrient status of the plants. Foliage and soil samples were analyzed for nutrient content via standard procedures at the UVM testing laboratory.

In October 2001, wood cores were taken from five trees within each of the plots using an increment borer. Cores were taken from the south side (Clark site) or the north side (Progeny site) of the trunk at breast height. Cores were glued into wooden mounts, dried, then cut and sanded until thin enough to see through when illuminated from below with strong light. Tree ring widths were measured to the nearest 0.01 mm using an optical measuring bench interfaced to a computer. Tree diameter was used to calculate basal area increment for each year from 1995-2001.

Due to the low level of replication, a Kruskal-Wallis nonparametric analy-

sis was used to compare treatment ranks. When significant differences were detected at the $p < 0.10$ level, a Bonferroni adjusted test was used to compare treatment means using SAS statistical software.

RESULTS

In general, liming treatment increased soil pH and soil calcium levels in the organic horizon, with much smaller effects in the A/B mineral soil horizon (Figure 1). Low soil pH impedes uptake of beneficial soil nutrients, and makes detrimental elements (iron, aluminum) more readily available. An increase in pH is generally beneficial to plants growing in forest soils of the northeast region. Minor addition of calcium in the cation mix had no real effect on soil pH.

All treatments at both sites had substantial effects on soil A/B calcium levels in relation to control soil calcium levels (Figure 2). Addition of one or more of the nutrients supplied in the treatment may have hastened litter and soil organic matter breakdown, or caused faster root turnover, resulting in higher soil calcium levels.

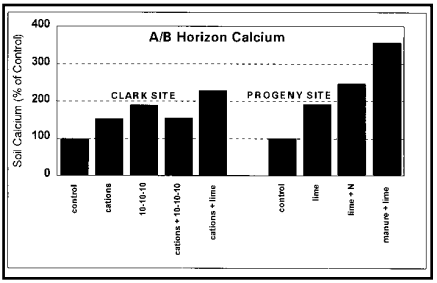


Figure 2. Soil A/B horizon calcium.

At both study sites, foliar calcium and nitrogen levels measured at the end of the growing season (August) increased compared to controls under all treatments (Figure 3). Foliar calcium increased by over 50% in some treatments. Nitrogen increased in most cases, but to a far lesser degree than calcium.

In general, the increased uptake of nutrients improved the photosynthetic

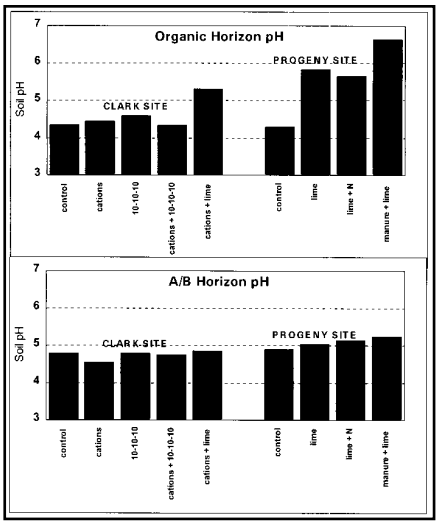


Figure 1. Soil organic horizon (top) and A/B Horizon (bottom) pH.

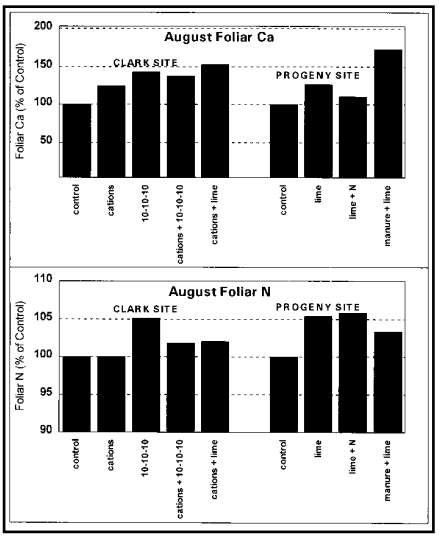


Figure 3. Foliar calcium (top) and foliar nitrogen (bottom) in August.

apparatus of the maple trees within the treatment plots (Figure 4). Because chlorophyll is the primary pigment responsible for capture of solar energy and conversion to chemical energy (sugars) within leaves, any increase in chlorophyll content or efficiency (fluorescence) would represent an enhanced ability of the trees within these plots to convert light energy into sugars. Chlorophyll content of trees within treated plots at both sites tended to increase, although only very slightly in some cases. Chlorophyll fluorescence, or the photochemical efficiency of the photosynthetic light reaction, also increased. Although the increase was slight, averaging only an 0.8% increase, when this small increase is multiplied over the millions of leaves in a tree over an entire growing season, it can result in a substantial increase in sugar acquisition.

Fertilization and liming generally increased basal area growth in these

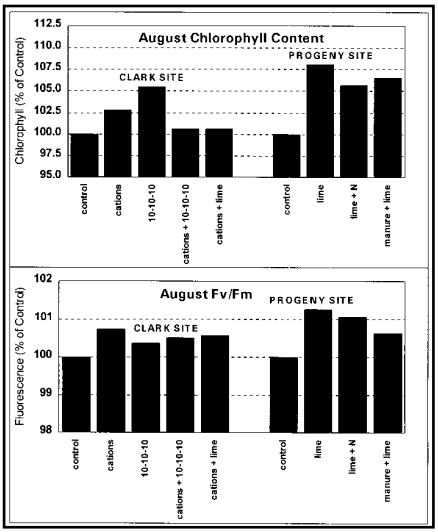


Figure 4. Foliar chlorophyll content and chlorophyll fluorescence in August.

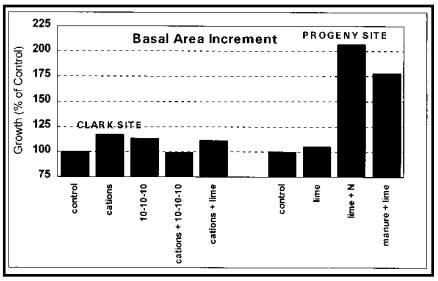


Figure 5. Basal area growth of trees in plots.

sites. The Progeny Site, which is considerably younger than the Clark site, responded to a much higher degree. When supplied with a nitrogen source in combination with liming, trees in the Progeny Site had almost twice the growth rate of untreated plots. Although liming alone had the maximum effect on chlorophyll content, the growth response with this treatment was unexpectedly small; similar treatment at other sites has yielded a much greater growth response. At the Clark Site, the growth response was considerably less. The cations + 10:10:10 treatment showed no change in growth. The other treatment plots averaged nearly 15% additional growth in comparison to control plots over the three year study period.

DISCUSSION

Good sugarbush managers utilize a suite of forest management tools. Although fertilization is by no means recommended for all maple stands, in areas of known deficiencies or where nutrient limitations may restrict physiological function of trees, fertilization and/or liming may improve vigor and growth of maple trees. In this study, we demonstrated that fertilization and liming can induce changes in soil nutrients and nutrient availability that

subsequently affect foliar nutrient levels, photosynthetic physiology, and ultimately, growth.

A subsequent article will detail the effects of fertilization and liming on sugar (sap volume and sweetness) in the Clark study area.

LITERATURE CITED

Barry, R. and Robichaud, E 1996. Effects of maple fertilization on sugar production. Report to the North American Maple Syrup Research Council and the New Brunswick Maple Producers Coop. 27p.

Lautenschlager, R.A., Pedlar, J.H., Winters, J.A., and Nielsen, C.M. 2003. Ice storm damage: Effects of competition and fertilization on the growth of sugar maple trees. Forestry Chron. 79: 63-69

Liu, X., Ellsworth, D.S. and Tyree, M.T. 1997. Leaf nutrition and photosynthetic performance of sugar maple (Acer saccharum) in stands with contrasting health conditions. Tree Physiol. 17:169-178.

Long, R.P., Horsley, S.B. and Lilja, P.R. 1997. Impact of forest liming on growth, vigor, and reproduction of sugar maple and associated hardwoods. Can. J. For. Res. 27:1560-1573.

Moore, J.D., Camiré, C. and Ouimet, R. 2000. Effects of liming on the nutrition, vigor, and growth of sugar maple at the Lake Clair Watershed, Quebec, Canada. Can. J. For. Res. 30:725-732.

Ouimet, R. and Fortin, J.M. 1992. Growth and foliar nutrient status of sugar maple: incidence of forest decline and reaction to fertilization. Can. J. For. Res. 22:699-706.

Wilmot, T.R., Ellsworth, D.S. and Tyree, M.T. 1995. Relationships among crown condition, growth, and stand nutrition in seven northern Vermont sugarbushes. Can. J. For. Res. 25:386-397.

Wilmot, T.R., Ellsworth, D.S. and Tyree, M.T. 1996. Base cation fertilization and liming effects on nutrition and growth of Vermont sugar maple stands. For. Ecol. Manage. 84:123-134.

Wilmot, T.R. 2002. A survey of sugar maple nutrition in Vermont and its implications for the fertilization of sugar maple stands. Maple Syrup Digest 12A:18-21.

ACKNOWLEDGEMENTS

This research was funded by: The Freeman Foundation, the North American Maple Syrup Council, and the U.S. Environmental Protection Agency. Thanks to Sumner Williams, Brian Stowe, Mark Isselhardt and Abby van den Berg for their able assistance in conducting this work.

REFLECTIONS

It was the early 60's. Kennedy was President, Nixon wasn't. Vietnam was not yet a household word, but the Beetles were fast becoming so. Flower Power was beginning to bloom, and in the next town, just a couple miles away, a mom and dad beamed with pride, as their son rode a rocket into history as the first United States man to fly into space. His name was Alan Shepherd.

These events, as noteworthy as they may have been, were far from the thoughts of the little boy growing up in Southern New Hampshire. While the world watched Kruchev banging his shoe on the table, and deadly missiles were being deployed in Cuba, the innocence of youth kindly insulated the boy. He was more interested in the sweet fragrance of the fresh cut hay in summer, the annual ritual of picking blueberries, and later on, harvesting the grapes that grew wild and prolific on his grandparents' farm. The last rites of summer came amidst the waning mild temperatures, which gave way to the crisp, clear, cool days of autumn. Raking the fallen leaves into piles that reached halfway to the sky, bodies would hurtle through the air at the piles, and land with a loud crunching of leaves and a cacophony of giggles and laughter. The collection of the horse chestnuts was also very important, as they were needed throughout the year as an instrument of barter, a sort of little boy currency. Throughout the waning sun drenched days of Fall,, a constant vigil was underway, daily haunting the garden where the pumpkins were maturing in a painfully slow way. Frank Perdue had nothing on these boys in playing music to his chickens to make them grow

faster. Long before FM radio stations blared soul music to the cranky old hens, pumpkins were talked to, encouraged, fussed over, and generally willed to grow, and turn orange. A good hard frost would end the pumpkin patrols and provide the material used to carve the jack-o-lanterns.

Soon enough, the long snowy winter would set in, and thoughts then turned to sledding, snow forts, and to digging long tunnels through snow banks. Winter was surely made for little boys, as it seems to be the bane of most everyone else.

Eventually, the snow and cold would loosen its icy grip, and give way to the gentle warm days of spring. By now, everyone, including the little boy, was a bit tired of winter, and were showing signs of enthusiasm as the days grew milder. For the boy, however, the excitement was for a different reason. The culmination of winter meant the event he most looked forward to was about to take place. Preparations were made, equipment was located and gathered together, and the yearly ritual of making maple syrup began. It was a small and primitive operation, but the boy did not know it as such, or even care, for that matter. This was what he looked forward to each year above all other things. It was the most magical time of the year, for him.

Laden with the tools of the trade, the team of adult and youth would make their way to the first tree. A bit brace, already an antique itself, would be employed, and as it performed its duty, the wooden handle creaked against pressure applied. The auger quietly crunched its way into the tree, and produced a steady

stream of little white wood chips, which gathered in the snow at the base of the tree. The creaking, the crunching, and the trail of chips eventually gave way to a neat, little round hole in the tree. Even before the auger had finished its duty, the boy was producing from overloaded pockets a cumbersome wooden spout, sumac wood that had been carefully carved by the knowing and skilled hands of his Grandfather. A nervous energy ran through the boy as spout was fitted to hole, and hammer fitted to spout. Gently it was tapped upon until secure. The collection vessel of choice (because it was free) was a #10 can which was hung on the spout, via a rusty piece of wire having been threaded through two small holes punched in the can.

Grandmother was the school cook, (actually, she was the entire hot lunch program from meal planning, to purchasing, to cleanup) so there was never a shortage of #10 cans around to utilize for various things. Get the green beans or beets out of the cans, wash 'em up good, and voila! You have your basic universal fit 'em all bolt storage/paint can/sap bucket! Who needs a Wall Mart? Anyway, I digress.

The wire bale was held on the spout by a little notch carved in the end of the spout. After hanging the can, all was silent as a seemingly long time passed until the sap built up in the tap hole, forced its way out the spout, and dripped with the distinct echo of what sounded remarkably like, uh, water dripping into an empty can. PLINK . . . PLINK. . . PLINK. To the ears of a young boy, it could have been no better if it had been the sound of coins falling instead. He knew how the oilmen must feel, as a new well is brought in, or a fisherman, casting his nets in the deep dark ocean, and pulling them in to find them full to the brim. Satisfied that this hole was a productive one, it was off to the next tree, snow crunching underfoot, tins clanging together, pockets bulging with spouts, and upon his face, a smile as big as the tree they had just tapped.

Fast forward 40 some years. The cold war has been replaced by global warming. Vietnam is out, Iraq is in. Kennedy, Nixon, The Beatles, even Flower Power, all gone, and to some degree, forgotten. Even the Grandfather has passed, but not without having taught the grandson, willing pupil that he was, many things .

The Grandson? There have been changes in his life also. As with most others, life has been a mixture of happiness along with hardships, sweetness with sorrow. Along the way he married, started a business, works hard, and enjoys the companionship of 3 sons. He also still heads to the forest each spring to renew his love of nature, to teach his boys in the traditions that are passed generation to generation, and, to make a little syrup.

As the young boy, I had the greatest of times on my Grandparents' farm. It was a mixture of carefree exploring, of learning about nature, of seeing the miracle of birth, as well as the sadness of death. I was in awe of anything, and wanted to learn about everything. I developed my love and appreciation of nature in the fields and forests surrounding the farm, and, sponge that I was, absorbed so much of what I witnessed day to day. Some of the lessons I learned, whether by watching, or at the hand (literally!) of my Father or Grandfather, stand me in good stead to this day.

I learned that life isn't always fair. Weather, crops, livestock, and people, all can let you down, so learn to deal with it, and move on. Work hard and work smart. Be honest and fair, and above all, don't give up. I learned in a less direct way to appreciate the gifts we so often take for granted. I love the scents of nature. Balsam fir, pine needles carpeting the ground, alfalfa or timothy freshly cut, the smell of the air after a summer rain. The sound of the wind in the tall trees, was, and always will be a wondrous thing to me, and to this day, when visiting the farm in the summer, I look for Blueits. Blue-its are a very small, delicate flower, they grow in fist size clumps, and as a child they epitomized summer to me. Fresh, delicate, pleasing to the eye, and they were always the old stand by when a guy needed to bring his mom flowers.

All my senses were sharpened and honed by experiencing firsthand the abundance and variety of the out of doors. This included the entire process of Maple Syrup production. While I understand that life for the adults was far from the easy, romantic existence I was enjoying, they did recognize the simplicity and beauty, as well as the bounty which nature gives us. Even though life seemed to be a continuous battle for survival, they nevertheless made time to teach us the wonders of nature, and instilled in us an appreciation and respect for the resources around us that provided so abundantly. Now, it is my turn to pass this knowledge and understanding on, not only to my boys, but also to any that are willing to hear the message. To be a successful Sugarmaker, one usually incorporates hard work, the love of nature, and the desire to preserve the resource, as well as the tradition, with the unexplainable inner need to teach and share

with others. The Term “Sugarmaker” is a carry over from the days when most product was finished into sugar, instead of syrup. This was for storage purposes, as there was no refrigeration. One of the greatest rewards I have ever received, is the feeling I get when I am introduced to someone as a Sugarmaker, particularly when the person introducing me is a Sugarmaker that I respect. No doubt to some, perhaps to many, it is just a name. It is who they are, it what they do. To me, it is a special moniker that brings with it all the aforementioned baggage, like “hard worker” and “nature advocate”, and “one that has learned to appreciate the resource”. It makes me feel elevated, and swelled (at least a little) with pride, to be associated with, and among the ranks of those that are not only very talented, but are committed to resource management and preservation.

I have a special affinity to those Sugarmakers who share the same childlike wonderment that I enjoy, who, no matter how old, are not embarrassed to admit they, as I, still feel the magic in the whole process. Who among us dare say they are not excited to see that first drop of sap, beginning the new season.

Month after month, I worry about my trees, as if they were friends. I worry about storms, pests, and the ravages of time. However, I have learned to accept that like my friends, the old and infirm die, to make room for the new and young. I see how aggressive and vigorous the young trees are, and how the older growth, mature and unwavering is patient, steadfast, strong, and in no particular need to prove anything to anyone. The fact alone they are there, is proof enough as to their character.

I am always in reverent awe as I marvel at the cavalcade of color that pops out each fall for its brief but spectacular show. I often wish we could have the color all year, but this thought usually gives way to the realization that if the chlorophyll did not mask the color with its green disguise all summer, I most likely would not appreciate the show nearly as I do now.

As in my youth, I still wait with nervous anticipation through the winter, and am still just as giddy with excitement when the first sap flow takes place. I have had some wonderful experiences in life, but I believe the most fulfilling has been to be given the special gift to be a steward of the land, and to serve, teach, and learn with my family. Together, we are developing an enterprise that not only produces income, but provides great satisfaction and enjoyment, all the while managing the resource, making the forest a healthier, more beautiful location.

Each year, we look forward to hosting individuals and groups that come to visit our operation. The magic is still very much there for me, and sharing those feelings, as well as teaching others about our small bit part in the larger show we call nature, is part and parcel of that magic. All groups are welcome, but the children are most special, as the innocence of youth makes for the most wonderful student. It is always an extraordinary opportunity to share the story of the Earth, the Forest, and of Sugarmaking.

Each Spring, the 3000+ taps that feed the collection system of plastic tubing will, under vacuum, produce approximately 30 to 40 thousand gallons of pure maple sap in a season, which usually starts mid March and can last for 2 to 6 weeks.

The sap is filtered, and run through a reverse osmosis machine, which removes upwards of 75% of the water from the sap. The remaining concentrate

is then processed through a wood fired evaporator where the heat and additional evaporation of water give us the sweet delicate maple syrup. The hot syrup is filtered, then packed in large drums, and then repacked through the year into small retail size containers. The 30 to 40 thousand gallons of sap will make approximately 800 to 1000 gallons of Pure Maple Syrup. In addition to producing syrup, we make and market other maple related items such as maple cream and maple sugar candies. We also hold seminars and clinics to teach people the proper techniques of maple production, and carry a full line of maple production equipment for sale.

From some very humble beginnings a dream was established, and through desire, hard work, and perseverance, the dream has gradually developed into reality. Fads may come and go, Presidents will change, and wars will be fought. However, traditions, like sugarmaking, passed generation to generation, can, and should last for all time.

RECIPE

Maple Cream Biscuits

Prep time: 10 min.
Baking time: 15 min.
Yield: About 12 biscuits

2 cups all-purpose or unbleached flour
1 tbs. baking powder
3/4 tsp. salt
4 tbs. cold unsalted butter, cut into 1/4-inch pieces
3/4 cu. heavy cream
1/4 cu. maple syrup
2 tbs. unsalted butter, melted with 2 tablespoons maple syrup

Preheat the oven to 425 degrees F. Combine the flour, baking powder, and salt in a large mixing bowl. Cut the butter into the flour until the mixture resembles a coarse meal. Make a well in this mixture.

Blend the heavy cream and 1/4 cup maple syrup and pour them into the well. Stir, just until the dough coheres. Turn the dough out onto a lightly floured surface and knead 4 or 5 times, gently. Pat or roll to a thickness of about 3/4 inch. Cut into 2 1/2-inch to 3-inch rounds with a biscuit cutter and place on a lightly greased baking sheet. Stir the melted butter/maple syrup mixture to blend it, then brush a little on each biscuit. Bake for about 15 minutes, until golden brown. Serve hot. Pass the remaining warm butter and syrup, to spoon over the split biscuits.

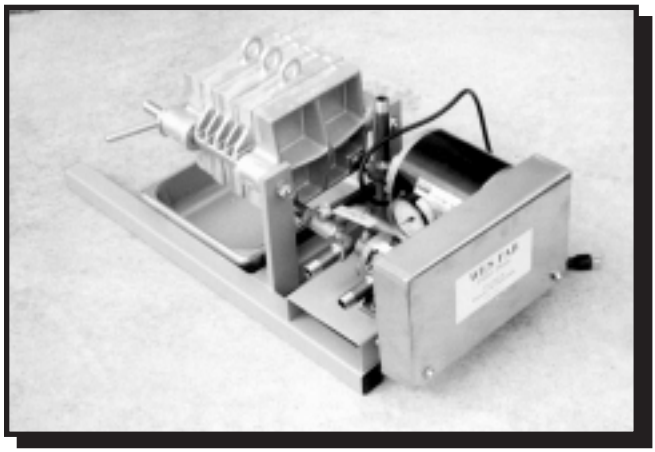
PRESSURE FILTER

From "Wes Fab"

Cost Effective Filter Press for the Small Producer

7" Short Stack Filter Press with Electric Motor Driven Pump

- Built for the Small Producer but designed to Expand.
- Uses standard 7" filter papers.
- Comes with the standard 7" filter press electric motor, gear pump & stand, so you can add more plates & frames as your production grows.
- Compact stand, lightweight aluminum plates & frames.
- Same high quality as our larger models.



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) 536-0501

COMING EVENTS

NAMSI/IMSI ANNUAL MEETING
October 17-20, 2004
Roaring Brook Ranch, Lake George, NY
For more information contact:
Mike Hill, 1 Robin Drive, Warrensburg, NY 12885
Phone: (518) 623-9783 Email: mhill@johnsburg.k12.ny.us

NEW ENGLAND MAPLE GRADING SCHOOL
December 8-10, 2004
Lancaster, New Hampshire
For more information contact:
(603) 527-5475 or e-mail: sumner.dole@unh.edu.

FEBRUARY 10-12, 2005

North American Farmers' Direct Marketing Conference and Trade Show, Boston Park Plaza Hotel, Boston, MA. In addition to educational sessions, outstanding speakers and a diverse trade show, the conference offers a three-day pre-conference bus tour, a day of workshops and a two-day post-conference bus tour.

For information, visit the Web site at www.nafdma.com, e-mail info@nafdma.com, or call (413) 529-0386. Registration begins Nov. 1 Pre-resigration deadline is Jan. 6.

NEW YORK STATE MAPLE TOUR
July 17, 18, 19 2005
The Batavia Holiday Inn
Batavia, New York
For more information contact:
Greg Zimpfer (585) 591-1190 or Stephen Childs (585) 786-2251

CLASSIFIED

FOR SALE: Used oil burner Beckett CF 2300, 7-20 gph. very good condition. $1,095. Used stainless syrup pan, 5' x 3' Grimm-lightning. $750. ALSO: Carageenan for maple jelly, 1 1/2 lbs. or $19.95 or $25.00 shipped - recipe included. Baker's Maple, P.O. Box 23, Bainbridge, NY 13733. *(607) 967-7229.*

FOR SALE: Evaporator never used, still in packing crates, 2 1/2 x 8 Grimm Lightning R.H. feed, Soldered pans. 50 buckets, spouts & covers. (2) 300 gallon poly tanks, clean. (1) 500' roll of 1/2" black plastic (1) roll of 1" blue plastic 300' (1) single cone filter tank. (1) 300 gal. SS milk tank. Miscellaneous bottle & jugs. Oak table w/4 chairs. **PLEASE CALL US** *(413) 623-6021.*

FOR SALE: Grimm 2' x 6' evaporator, new 1999, 2' x 4' steam hood and everything you need, $2,500. *(260) 665-7218* or e-mail *mapletown@juno.com* for complete list.

IN MEMORIUM

DALE JEFFREY

It is with sadness that we report of the death of Dale Jeffrey of Wagner's Sugar Camp, Salisbury, Somerset County, PA. His death followed a lengthy illness and his life ended May 14, 2004.

He was the son of Dorothy B. Wagner Jeffrey and the late Robert Jeffrey, Jr. His is also survived by a sister, Sue Jeffrey, who is active in the maple business. The Wagner Camp has a grand history and Dale's mom Dorothy, along with her sisters, Thelma Wagner Miller, Mildred Wagner Blocher, and Leona Wagner, learned the skills from their parents, working with them in the early 1900s, making syrup and brick sugar. The fireplace and crane from this early operation remain as tribute in the renovated modern Wagner Sugar Camp.

Dale was a farmer and a sugar maple producer and always intensely interested in seeing the Maple Industry make use of modern technology. He took advantage of any research areas he could find and was anxious to share what he learned through demonstrations, conversations and educational exhibits. He was involved on the local, state and national levels where maple was the subject. The industry will miss his expertise.

In addition to the Somerset County Maple Producers Association, Dale was a member of Salisbury-Elklick Hunting Club, Casselman River Watershed Association, National Wild Turkey Federation, NRA and attended the Somerset Alliance Church.

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
(603) 783-4468

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

DEADLINE FOR NEXT ISSUE

NOVEMBER 1, 2004

IF YOUR MAILING LABEL READS

SO04

Subscription ends October 04

THIS IS YOUR LAST PAID ISSUE

Please renew your subscription

LEADER EVAPORATOR CO.

Tap Into It!!!

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

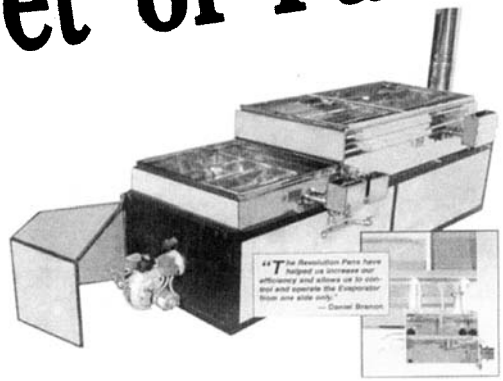
The REVOLUTION Welded Set of Pans

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