

# *Maple Syrup Digest*

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October 2016



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## ***Sugarbush Management Succession Planning Sap from Small-Diameter Trees***

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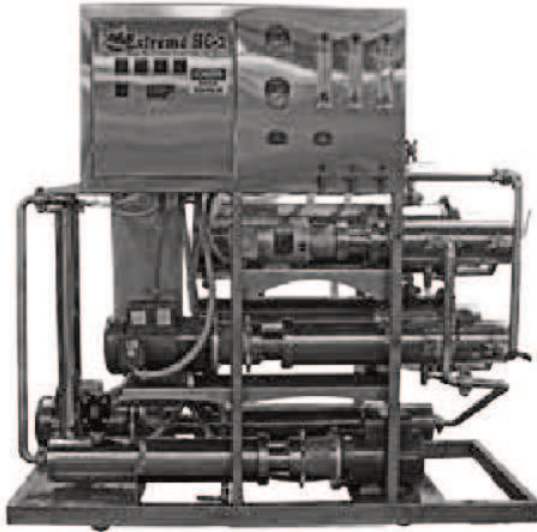


*The Newsletter of the North American Maple Syrup Council*





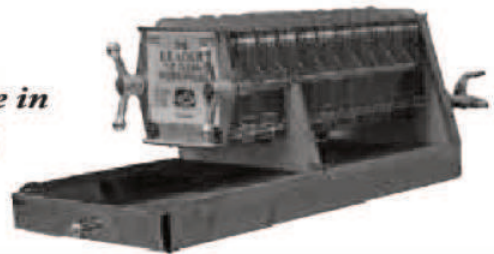
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# MAPLE SYRUP DIGEST

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## Greetings from your President



With the sugaring season and clean-up now well behind us, as well as the closing days of a host of regional, county and state fairs, it is time to focus on the sugarbushes and the next production season. No segment of agriculture operates very long without a “weather event” of some sort, and in our industry the array of events seem unending. Most of the Northeastern US and much of Canada is currently in record drought, the impacts of which we will no doubt observe over the next decade or more. While the extremely dry weather purportedly has helped to curtail damage being inflicted by invasive pests like the Hemlock Woolly Adelgid, it may also adversely inflict all manner of forest health issues, influencing sap production.

I encourage each of you to look carefully at this issue of the *Maple Syrup Digest*. The authors and editor have ventured into areas that ought to be considered by all of us. I am not sure that I know of any sugarmaker who is comfortable discussing his or her succession planning for their maple operation, but then again, most folks in our business anticipate sugaring forever! I encourage us to read and more importantly heed the guidance provided by the article dealing with your plans for your sugaring operation beyond your lifetime.

A real benefit of having the *Digest*

electronically archived is the speed with which one can review previous articles. Prior to this, one simply had to thumb through past issues—assuming one was able to find the past issues. Quick research has revealed that only a few articles historically have been published relating to silviculture and sugarbush management. Recently, I’ve listened to several ForestConnect webinars which were focused on woodlot management and found that the article in this issue concisely includes a well presented primer for sugarbush managers to consider. I am convinced that the novice as well as veteran woods worker will find something new from this submission.

While work in our sugarhouses, woodlots and marketplaces rightfully occupies a large portion of our lives, so too does the work of our associations. The business of providing fresh, accurate, meaningful and timely information to our colleagues is a large part of the missions of state, province and international organizations. As the delegates and guests from the maple producing provinces and states prepare to meet in Burlington, Vermont each of you has an obligation to provide your delegate with your concerns and suggestions. The Council has begun an aggressive agenda to not only complete the latest edition of the *North American Maple Syrup Producers Manual*, but to roll out a series of training modules to assist producers with basic as well as advanced techniques. Our current thinking is to have a series of electronically accessed, short (5-10 minute),

*President: continued on page 7*

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**Cover photo:** Overtapping is a serious concern, but this tree in Massachusetts was decorated this way during the season as a joke. The owners were having it removed later that month due to decay. Thanks to photographer Paul Franz for allowing us to reprint it.



### **President: continued from page 5**

voice-over slideshow presentations to complement the host of longer lecture format training modules now available from extension professionals and equipment manufacturers or vendor's documents. Trade shows, annual meetings, summer tours are fine events but sadly are reaching only a tiny fraction of our members. Hopefully, the educational and communications outreach of the Council will make more and timely information available to a wider audience.

As always, I appreciate feedback, suggestions and especially your contribution to our industry and way of life. I look forward to seeing many of you in Burlington, or during your annual meetings, events, and workshops.

Kind regards,  
Eric Randall, NAMSC President

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## Maintaining a Healthy Sugarbush

*Peter Smallidge, NYS Extension Forester, Director of the Arnot Teaching and Research Forest, Cornell University*

**P**roducers of rural goods, such as maple syrup, often remind consumers that food doesn't come from the grocery store. That said, some maple producers forget where maple syrup comes from – not from the evaporator, or the RO, or the vacuum pump, but from the sugarbush. Maple producers benefit from spending time, and maybe some money, ensuring they have a healthy and productive sugarbush.

A sugarbush is a special type of woodland. Woodlands include a complex mixture of natural processes and attributes such as soil type, elevation, tree species, types of wildlife, history of use, tree age and more. Foresters can help maple producers gain an in-depth understanding of these factors to achieve a healthy and productive sugarbush, but there are several steps a maple producer can take on their own.

Three principles should guide the way a maple producer looks at a sugarbush. These principles apply to all woodlands. First, managing the sugarbush is really about managing which plants receive sunlight. Sunlight feeds the leaves which are responsible for making sugar, which of course is needed for high quality sap. Second, trees are biological organisms, similar in some respects to a tomato plant, a cow, or a human being. Biological organisms are born, grow and eventually deteriorate with age. They also respond to stressors in their environment, and their vigor determines how well they respond. Third, as trees get larger they

require more space. Because trees can't move as they get crowded, some trees will die as the sugarbush matures.

With these principles in mind, a reasonable goal for a sugarbush is to make sure that trees of good vigor and potential longevity have adequate sunlight, stress events are minimized, and the effects of crowding are controlled by the owner, who selects which trees remain. Following are a few actions that maple producers can take to help keep their sugarbush healthy and productive.

*Monitor crown health.* The leafy part of the tree, the crown, is perhaps the most important part of the tree to monitor. Be alert to evidence of unhealthy crowns. Symptoms of poor crown health may include dead branches in the upper part of the crown, poor leaf color, unusually small leaves, or a transparent crown. There will always be a couple of trees in a sugarbush with poor crown health, but if several trees show these symptoms a problem exists.

While a symptom tells you a problem exists, it doesn't usually identify the cause. Crown health may decline as a result of root problems, such as compaction from machinery. Repeated injury to the crown can also reduce health, for example when defoliation coincides with drought. Crown problems may result in less sugar production and lower yields the following sap season.

In extreme cases, minimize or avoid tapping to allow trees to recover a healthy crown. Unfortunately, the causes of unhealthy crowns often can



be difficult to change, but some of the following actions can help maintain good crown health.

*Assess competition for light among trees.* Trees need light to grow. Although sugar maples are tolerant of shade, they don't thrive in shade. Maple producers need their trees to thrive, not just survive. The appropriate stocking, that is the number of trees of given sizes per acre, is a numeric index of competition for resources, specifically light. There are also visual indications of too much competition for light.

First, if the upper canopy, the collective crowns of the tall trees, is closed and doesn't allow sunlight through, there may be too much competition for light. If the canopy is closed and some trees have rounded crowns yet other crowns are flattened on two or more sides, there is likely too much competition. If the maple trees produce seeds, but there are no seedlings, there is either too much shade or too many deer.

Before taking action, visual cues to competition should be assessed by a forester who will measure stocking. In many cases the state forestry agency can provide a public forester to do the assessment. These foresters are pre-paid – your tax dollars at work. If competition is high, thinning around the best trees will ensure they have enough light to continue to thrive. Look for resources on Crop Tree Management to guide the selection of trees to cut and those to leave.

Woodlot and sugarbush thinning webinars are archived at [www.youtube.com/ForestConnect](http://www.youtube.com/ForestConnect)

*Look for interfering plants.* Interfering plants are either native or non-native (AKA "invasive"), and interfere with something the owner wants to accomplish. Examples of interfering plants include multiflora rose, ferns, beech, striped maple, bush honeysuckle, and many others (Figure 3). For maple producers, interfering plants may complicate access for tubing or buckets. Interfering plants may also impede efforts

*Sugarbush: continued on page 10*



The tree on the right shorter than the tree to the left, and has a smaller crown. The tree on the left is winning in the contest for light, but the shorter tree is still having a negative impact.

## ***Sugarbush: continued from page 9***

to establish young desirable maple seedlings. In some areas, deer pressure is high and they browse desired plants. This browsing gives a growth advantage to the interfering plants that deer don't browse. Strategies and techniques to control interfering plants depends on the problem plant, its abundance, how thoroughly the maple producer wants to control the plant, and if the producer will use herbicides or organic strategies. The website at [www.forestconnect.info](http://www.forestconnect.info) includes numerous resources to help control interfering plants.

*Monitor tree diameter growth.* Tree diameter growth is critical to maple syrup producers. Diameter growth is an index of crown health. Diameter growth also helps heal tap holes, add new wood for future tapping, and serves as a reservoir for sap. A tree may produce the same amount of wood each year, but the thickness, known as the diameter increment, will decrease because the wood is spread around a bigger tree.

Tapping guidelines assume tree growth is sufficient to add new wood and prevent future tapping into columns of stain from prior tapping. "Pattern tapping" helps prevent tapping into a stain column, and so does adequate diameter growth. Producers should expect annual diameter increments of 1/8th to 1/10th of an inch for trees less than 16 inches, 1/10th to 1/12th of an inch per year for trees 16 to 20 inches, and 1/12th to 1/16th of an inch for larger trees. The actual growth necessary to provide a sufficient thickness of new wood depends on depth of tapping and the offset of the tapping pattern between years. "Band tapping" high versus low bands of the tree will reduce the expectation for diameter

growth (but why would you strive for slower growing trees?).

Annual measurements at the same position on the stem with a tape measure will reveal tree growth. Producers can place an aluminum nail in the tree at 12" high, and use a 3.5 ft stick to locate the correct height to measure diameter at breast height (dbh) and thus achieve consistent annual measurements. Measure a minimum of 30 to 40 trees, but at least one per acre. Just as producers should measure sugar concentration, so they need to measure tree diameter growth.

*Consider tree age and longevity.* Sugar maples can be long-lived trees, with some reaching 300 to 400 years of age under ideal conditions. Under normal conditions, maple will likely have reduced production between 150 and 250 years of age. Producers could assess if there are patches of old or otherwise unproductive maples and regenerate small patches every few years. Cutting within patches needs to be sufficiently intense to allow sunlight to the forest floor. Patches could be 0.25 to 0.75 acres, but vigorous trees within the patch could be retained. Young seedlings should be protected from deer by fencing or dense continuous piles of brush around the perimeter. A forester can help assign vigor-ratings to trees, and producers can monitor sap production for individual trees. The location and timing of patch cuts should synchronize with planned changes of tubing and mainline.

*Livestock.* Historically many farm woodlots and sugarbushes allowed cattle and other livestock to free range. In these cases, grazing involved a perimeter fence and then free choice by the livestock. This continuous or set-stock grazing proved detrimental to the ani-

mals, the trees and the land where the stocking rate was too high (same concept as for trees). Sustainable grazing is possible, but requires considerable work.

Silvopasture is a deliberate process of integrating livestock into woodlands while also managing for nutritious forage plants. Management-intensive rotational grazing in small paddocks, with herd/flock movement daily ensures ample rest periods for the land,



Disease and damage can cause weak stems that are prone to failure. Trees like the one pictured should be removed to avoid complications during the season and free growing space for nearby maple trees.

and intensive and restorative grazing of the forages. With careful planning, silvopasture practices can solve some interfering plant problems. Any plans for deliberate grazing should ensure that root damage is avoided – pigs in particular can cause root damage through their tendency to “root.” The website at [www.forestconnect.info](http://www.forestconnect.info) has several references and resources for silvopasture.

*Avoid soil ruts and compaction.* While tree crowns are perhaps the most important part of the tree for producers, tree roots tie for first place or are a very close second place. The roots anchor the tree to the ground, pull water from the ground into the stem for sap, and feed the foliage. Damage to roots by tractors, skidders, or livestock can cause irreparable damage. It is easier to prevent a problem than fix a problem.

Producers with buckets need to access the sugarbush, but they should limit the number of trails. In chronically damp or soggy areas, install corduroy with a continuous matt of small logs and poles to float the tractor. Use as small a machine as possible that is safe and effective, and add high flotation tires if practical. Other types of woods work should allow equipment only during seasons when the ground is firm, usually summer, dry falls, and during cold winters. Repairing ruts with fill or corduroy may help avoid the need for a new trail and new damage in a new area, but this will not repair the damage to the roots.

*Mixtures of species.* Your sugarbush will generally be healthier and more resistant to stresses such as insect defoliation if there is a mixture of species. When thinning a sugarbush to provide

*Sugarbush: continued on page 12*

**Sugarbush: continued from page 11**

more light to desired trees, avoid the creating a monoculture. Providing adequate sunlight to keep a thrifty maple healthy may be best accomplished by cutting another maple – there, I said it: it is okay to cut a maple.

Seriously though, most producers can look at a maple with a small crown, weak fork, or old scars from maple borers or tractors and know that tree is not productive or is otherwise risky. Bucket producers have the advantage of truly knowing a tree's productive capacity. Paint or mark a tree of low productivity during the season, and cut that tree later in the year when time permits. When cutting firewood or thinning, set a target for the main canopy to be about 75% sugar maple or red maple and 25%

other species. These aren't hard numbers, but use them as a guideline.

Time, of course, is the biggest obstacle to maple producers working in their sugarbush. Start with the easy tasks, and keep a list of priorities. Use this list to guide a discussion with a forester from your state forestry agency or your consulting forester. Let them know your goal is a productive and healthy sugarbush. A forester can help you develop a plan and a schedule to optimize the use of your time. Finally: be safe in the woods. There are too many stories of maple producers hit by trees and crushed by tractors.

*Acknowledgements: Joe Orefice and Steve Childs provided helpful reviews of this article.*

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# The Cost of Production for Vermont Maple Syrup

Mark Cannella, Farm Business Specialist, University of Vermont Extension

Maple is the second largest agricultural sector in Vermont. In 2015 it represented over \$44 Million in cash receipts with 4,490,000 taps producing over 1.39 million gallons of syrup. Vermont producers are also the consistent leaders in maple productivity across the country (USDA NASS, 2015). Innovations in sap collection and sugarhouse efficiency have enabled the rapid expansion of enterprises and the establishment of new maple businesses at larger scales than experienced in previous decades. The maple resource is available with room to grow. Research showed that in 2011 Vermont was using roughly 3% of the state's maple resource on syrup production. Analysis of nine other maple producing states in the same year showed less than 1% utilization of their maple resource for syrup production (Farrell & Chabot, 2012).

Larger scale and higher technology maple businesses balance the opportunity for high yields with the trade-off of higher initial investment costs and new management practices. Many maple enterprises maintain higher fixed costs in the form of loan payments or depreciation under these new management systems. The adoption of reverse osmosis (RO) technology has reduced labor in the sugarhouse but much of that labor has been shifted to the labor required in the woods to manage more taps on vacuum tubing systems. Both depreciation and owner labor are non-cash economic costs that individual producers

and their accountants are not always accustomed to measuring accurately.

The strong and stable bulk maple prices helping fuel US maple expansion for several years are now dipping downwards. Despite public presentations that the US maple production may need to grow at 10% per year to keep pace with market expansion, the current market expansion is occurring at far lower prices. Bulk maple prices for US producers peaked in 2012 near \$2.92 per pound. By 2016 US prices for bulk syrup are being quoted at ~\$2.20 per pound. Previously, most producers were concerned that overproduction would disrupt the price stability resulting from the Federation of Quebec Maple Producers supply management programs (Sherwood, 2014). Instead, current price reductions for the US maple industry are due to US/Canadian currency exchange rates and a stronger US dollar (Perkins, Isslehardt, Van Den Berg, 2015). If the situation persists, high cost enterprises will face cash flow issues and owners will be forced to defer cash draws for salary. Would-be expansion projects are currently being re-evaluated for their feasibility at different market price forecasts.

The University of Vermont Maple Benchmark project is advancing the study of maple economics and supporting management decision making at the individual business level. The following article summarizes the cost of production findings from 2014

*Cost: continued on page 14*

**Cost: continued from page 13**

and synthesizes key trends in business management. The full benchmark results are available online at: <http://blog.uvm.edu/farmvia/>

**Methods**

Business data was collected from 18 maple producers in Vermont. The initial roster of participants (the study began in 2013) came from a combination of referrals within the industry and recruitment at public events. The participating maple businesses are not necessarily a representative sample of the industry at large. The majority of participants have over 15 years of experience running their maple business, and the cumulative average yield across the study group has been higher than state averages for 2013 and 2014. The small study group, however, provides a detailed look at financial performance merged with observations of the unique business dynamics that influence each enterprise.

Participating businesses shared accounting records, labor records and business information with outreach educators. Cash-based accounting re-

ords were standardized to accrual production-based income formats using standards from the Farm Financial Standards Council (FFSC, 2014). Farm investments were recorded based on purchase price and depreciation was calculated using straight line methods over standardized lifespans typical of maple assets. A primary challenge with financial analysis of any agricultural business is the presence of unpaid owner/family labor and management. For this study unpaid labor was recorded and valued at \$18 per hour. Actual salaries were standardized and adjusted to match industry standards on productivity and managerial responsibilities. The following cost of production (COP) definitions are used to define findings with these methods:

- COP from Operations: Includes variable costs, fixed costs (excluding loans, capital expenses and owner compensation)
- COP with Depreciation: Includes COP from Operations and depreciation. It does not include owner draws or unpaid labor/management.
- Full Economic COP: Includes COP

with Depreciation, owner draws and the value of unpaid labor/management. All unpaid owner labor is tracked and valued at \$18 per hour.

**Results**

*Investment*

Purchase price investment for equipment

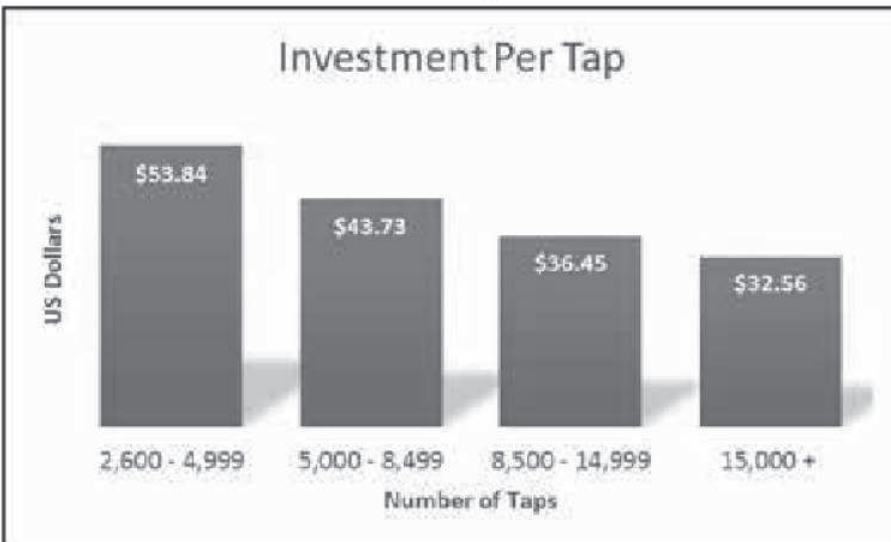


Figure 1: Average Investment (Purchase Price) in Relation to Production Scale

ranges from \$18 per tap to \$70 per tap. This does not include real estate investments. The average investment for existing businesses is \$45 per tap. The data shows two key trends. First, above average yield producers (over 4.26 lbs syrup per tap) have more invested per tap compared to below average producers. A high yield producer (average investment = \$50 per tap) will have spent \$250,000 on a 5,000 tap set-up compared to a \$190,000 (\$38 per tap) investment for a below average yield enterprise. Second, larger businesses have a lower investment per tap. Figure 1 shows how maple businesses with 15,000 taps and more are spending roughly 40% less on investments than small enterprises.

### Cost of Production

Cost analysis shows that each producer's top cash expenses varied significantly. Wood fired evaporators did not have fuel expenses but incurred increased owner labor expenses for fuel-wood preparation. Purchased syrup is a significant expense for enterprises that repack products for retail sales. Newly established sugar woods have low repairs and maintenance expenses in the first 3 years. Many enterprises show large expenses for "supplies" but the application of uniform capitalization rules often reveals that tap expansion projects (hardware and pipeline) should be removed from "supplies," capitalized, and depreciated over multiple years.

Non-cash or economic costs are significant for maple enterprises. Economic valuation techniques were used to measure the value of unpaid owner labor in the absence of cash payments. The largest expense category across all participants are the combined total of paid hired labor, unpaid owner labor and owner salaries. These three labor charges combine to average ~26% of gross sales for the study group. The next largest expense is depreciation. Depreciation accounts for an average of 20% of gross sales for the study group. In short, a family operated maple business (with no payroll expenses) could be in a situation where approximately 46% of gross sales are attributed to non-cash expenses. The direct result is that many producers are retaining large amounts of surplus cash with the discretion to apply this cash to owner payments, capital improvements/expansions, or to retain a cash reserve.

Cost of production (COP) was measured at three levels. In 2014 average "COP for Operations" is \$9.15 per tap and \$2.09 per pound. "COP with Depreciation" uses COP from Operations and adds the economic cost of aging assets. "COP with depreciation" is \$12.04 per tap and \$2.72 per pound. The Full Economic COP adds a value for unpaid owner labor and management to the cost profile. In 2014 the benchmark group demonstrated Full Economic COP of \$15.71 per tap or \$3.65 per pound. See Table 1 and Table 2.

Cost of production is lowest for the

*Cost: continued on page 16*

	Range		Average	Median
	Low	High		
<b>COP (Operations) Per Tap</b>	\$ 3.07	\$ 19.27	\$ 9.15	\$ 6.95
<b>COP (Operations) Per Gallon</b>	\$ 6.35	\$ 61.71	\$ 23.25	\$ 20.00
<b>COP (Operations) Per Pound</b>	\$ 0.57	\$ 5.53	\$ 2.09	\$ 1.79

Table 1: Operating cost of production

**Cost: continued from page 15**

largest scale enterprises studied. This study did observe a small number of smaller enterprises selling to bulk markets that have a low cost of production (under \$2.50 per pound). It is possible to establish an efficient low cost enterprise less than 5,000 taps. Other participating businesses under 5,000 taps have very high cost of production due to a large amount of owner labor required to direct market syrup. Figure 2 shows the relationship between business scale and cost of production. The majority of producers from 5,000 – 14,999 taps have a mixed market strategy. These producers sell to a mix of bulk, wholesale, and retail accounts in order to generate an average pay price that covers their cost of production.

The study found maple businesses realizing profits and losses at all scales, from 2,500 taps to over 15,000 taps.

**Discussion**

Bulk producers indicate they can tolerate a short term situation of prices around \$2.20 per pound. Many managers are uncomfortable with the prospect of sustained prices near \$2.00 per pound. At the same time, direct marketers and direct wholesalers are saying that their prices have not shifted down as drastically yet. They anticipate downward pressure on these prices over time but they note that there is a lag time for retail price adjustments

that works in their favor in the short term.

**Scale and Right-Sizing**

For many agricultural sectors there are sweet-spots where businesses thrive and also “no-man’s-land” where a business can get stuck. Maple is the same. It appears that there is a sweet spot for part-time enterprises from 3,000-5,000 taps. Owners can handle the seasonal surge of labor and management and earn reasonable compensation for this part time venture. This “stage-1” maple business may decide to direct market or wholesale a portion of the crop to increase overall sales, but only as long as the time associated with sales does not interfere with the owner’s “day-job.” Technology advancements allow for managers to handle ~ 4,000 taps with limited hired labor and modest marketing efforts.

Findings indicate that a “no-mans-land” might exist as these enterprises increase past 5,000 taps. It is not clear exactly where the next sweet spot for a “stage-2” business develops between 8,000 and 15,000 taps. Maple businesses scaled from 5,000 - 8,499 taps do not demonstrate a cost of production advantage over smaller or larger enterprises. Owner labor/management, hired labor and new investments are big factors that influence performance at this scale. A “stage-2” 10,000 tap enterprise has a new inventory of equip-

	Range		Average	Median
	Low	High		
Full Economic Cost of Production (COP) Per Tap	\$ 9.30	\$ 24.95	\$ 15.71	\$ 14.50
Full Economic Cost of Production (COP) Per Gallon	\$ 17.19	\$ 92.40	\$ 40.75	\$ 35.59
Full Economic Cost of Production (COP) Per Pound	\$ 1.54	\$ 8.29	\$ 3.65	\$ 3.19

Table 2: Full economic cost of production



ment (expanded from the 5,000 tap scale) and there is enough syrup flowing through the draw-off to payback the investment. This next scale requires more management and labor but these operators are often streamlining owner labor by transitioning to bulk sales. Many 10,000+ tap enterprises are managed by owners that still have other farm/forest businesses or off-farm jobs for most of the year.

Stage-3 maple businesses emerge near 20,000 taps. At average yields and bulk prices (4.4 lbs. syrup per tap x \$2.40 per lb.) the annual gross sales will total approximately \$200,000. Across all agriculture the \$200,000 level is a place where owners can participate full-time and retain a salary from business income. Stage-3 maple owners also have enough work laid out to hire a full time-employee or multiple seasonal employees to manage everything from pipeline repairs to new marketing activities.

It is presumptuous to suggest a “right-size” for any particular business. Maple managers must observe and adjust based on their particular situation. The solution might even be to downsize production or shift to alternative markets. Adding 500 -1,000 taps at a time will not always lead to better economic outcomes. The jump to the next sweet-spot may require a larger investment or marketing shift than previously anticipated, and it may yield better returns.

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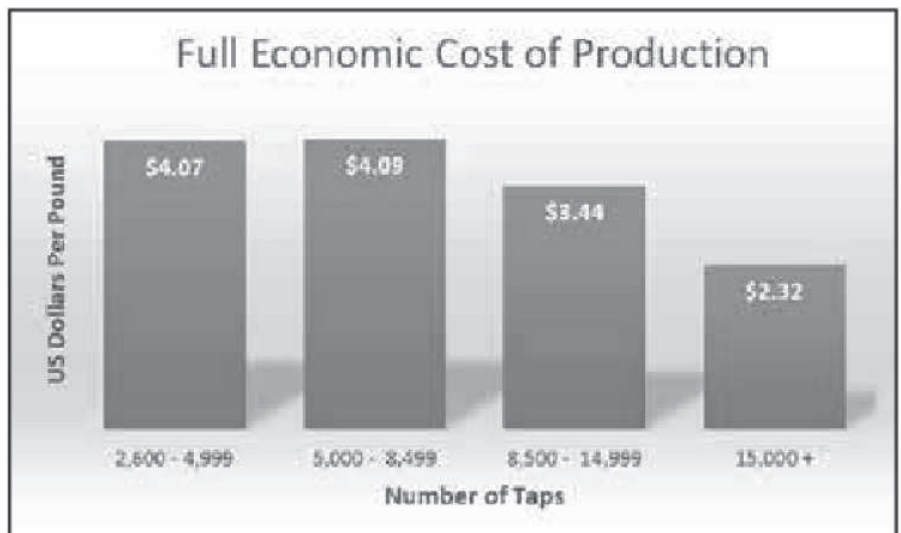


Figure 2: Full Economic Cost of Production in Relation to Production Scale



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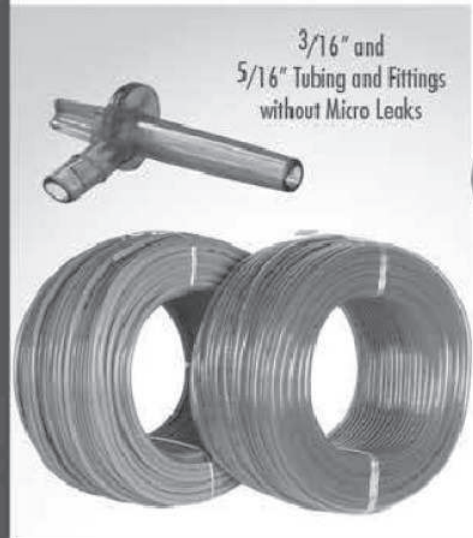


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## Planning for the Future of your Sugaring Operation

*Kathy Ruhf, Senior Program Director, Land for Good*

**O**f all the daily challenges that maple producers and other farmers face, farm succession is not usually high on the list. It's easier to put off planning, and to avoid uncomfortable subjects like death and taxes. But the future of your sugaring operation – and your own future – are important. With an aging farmer population, including maple producers, more attention must be paid to how farmers can successfully transition out of active farming. At the same time, burgeoning interest in farming from young (and not so young) folks – many of whom do not come from farm backgrounds – offers creative transition opportunities. Older farmers can arrange for the continuing productive use of sugarbush and other productive lands.

Farm succession is the transfer a farm or farm business from one generation or owner to the next. Historically, transfers within the family have been the typical pattern, but in recent decades, fewer older farmers have family members interested in taking over the farm. In fact, up to two-thirds of farmers do not have an identified successor. Whether or not there is a successor in the wings, what happens to the farm operation, the land and the senior farmer or farming couple is a family matter.

Farm succession (also known as farm transfer) planning refers to the process of determining how (or if) a business will continue after the senior/leader exits. The plan determines who will take leadership and/or ownership and how that transition happens. It ad-

resses the transfer of income, assets and management. It lays out the path to retirement.

A transfer just doesn't "happen." Inadequate planning can result in undesirable and sometimes catastrophic outcomes. Heirs may be forced to sell land, farm businesses may close down, sugarbush could be abandoned. But with timely and thoughtful planning, your personal, family and business goals can be met.

Succession issues are not unique to farm businesses, but agriculture poses particular challenges, and sugaring operations have their own special considerations.

Farm transfers can be more complex than in other business sectors, in part because a transfer typically considers both the land and the business. The land is often the most significant asset, and the business operator typically lives there. Many family-owned businesses have meaningful histories and assets, but farms hold unique places in the hearts of their owners, sometimes for generations. Farm businesses may transfer to a non-family successor, but the land may stay in the family. Conversely, the transfer of land does not equate to the transfer of business ownership. The land has unique standing, not just because of its monetary value, but also because of its non-monetary legacy.

Succession planning involves estate planning, retirement planning, land

*Succession: continued on page 20*

**Succession: continued from page 19**

use planning and business planning. A will is necessary of course, and some farmers are fine with letting their heirs figure it all out. But desired succession outcomes often occur before death, particularly around notions of retirement and financially advantageous methods to transfer assets before death.

Retirement means different things to different people. In the non-farming sector, many people “retire” the day they leave their job, period. In agriculture, many older farmers keep farming for various reasons, and in various ways. Some farmers say they’ll never retire. Technology and mechanization alleviate the physical demands of farming allowing many to continue far longer than in the past. And while farmers may complain, most experience a strong attachment to, and continuing satisfaction with at least some aspects of farming. One farmer may say he’s retired, but continue to run the combine or help with harvesting hay or pumpkins. Others may claim to

be “partly retired” but still control the checkbook. In the maple industry, an older farmer might adapt technology (for example, going from a wood-fired evaporator to another fuel source or adding reverse osmosis) or hire more help to ease the more strenuous aspects of the operation.

If retirement is defined as providing no managerial control or labor to the farm, it’s easy to see shades of gray. In fact, retirement is a process that can take years, and unfolds according to the unique needs and preferences of the farmer and significant others. In one survey, nearly half the farmers reported they had not discussed retirement with anyone.

In the maple industry, the sugaring operation might be one enterprise in a larger, diverse farm, where most or all the land is owned by the operator. However, you might have few or no land holdings. You may access sugarbush owned by others through formal written leases or less formal, “handshake” use agreements with landowners. If you desire to continue and pass on the sugaring enterprise, it’s important to have a clear grasp on all land use agreements. Is a verbal agreement adequate for your future and subsequent operators? Who is the agreement between? Often, and where feasible, a written agreement is preferable. A savvy successor will want reasonable assurances provided by a lease or other written use agreement. The agreement should provide that the rights remain with the sugaring business, or for the assignment of the rights to the trees to a successor.

Consider too the succession planning – or lack thereof – by the owner of the sugarbush that the maple operator is using. If the landowner has not done

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adequate planning, the land might get fragmented and/or sold. New owners might not appreciate the tubing through the woods or having other people on their property. So it's a good idea to find out what the landowner has planned, and to express any concerns you have.

The foundation of successful succession planning is built with a clear vision, specific goals and open communications. Once these are in place, you can resolve financial, tax, legal matters and management transfer.

Yes, it's hard to get started—to ponder your legacy, pull a family meeting together around the future of the farm, or to sit down and figure out your anticipated retirement income and expenses. But the “no plan” option can be costly, disadvantageous and divisive.

Succession planning advisors often say, “The hard issues are the soft issues.” The “soft issues” are around vision, goals, family dynamics, and decision-making. Who needs to be involved? Do you and your spouse have a shared vision? Are your children on board? What about key employees? Neighbors? Owners of sugarbush that you tap? Some farm families get stuck right at the beginning. They stumble in their family communications and can't make effective compromises or decisions.

With good communications, some specific questions can be addressed. Is the operation healthy enough to transfer? What changes are needed? What are the retirement income needs of the exiting farmer or farm couple and what portion of those must be met from the farm? Can those needs be accommodated while enabling an affordable transition to the next farmer? How and

when will decision-making and control shift? How will heirs be treated equitably? A lot of these answers depend on the financial profile of the business and the farm family's total assets. And often these are more obscure than farmers might want to admit. Getting the business' financial ducks in a row is essential, whether it's a part-time, sole proprietor sugaring operation or a land extensive, multi-enterprise, multi-generation farm.

As important, and sometimes the most challenging, is transferring management skills to the successor. Important topics include financial management and marketing of syrup and maple products. For many senior farmers, letting go of control is hard. And not everyone is naturally gifted at mentoring.

Succession planning takes time – sometimes a year or more. And the actual transition can take a decade. For farmers without identified successors, recruiting and training a non-family successor requires patience and relationship-building. Good planning means lining up some important documents such as your will, power of attorney and medical directives, your farm's financials, relevant leases, and insurance and tax forms. A young farmer noted that one of the greatest gifts her farmer-father gave her was a binder with all this information in one place. It made settling his estate and transitioning the business relatively painless.

Succession planning also takes a team of advisors. Some groups and institutions have well established programs to assist and educate farm families about succession planning. More are emerging. These include so-called “farm link” services, succession tech-

*Succession: continued on page 23*



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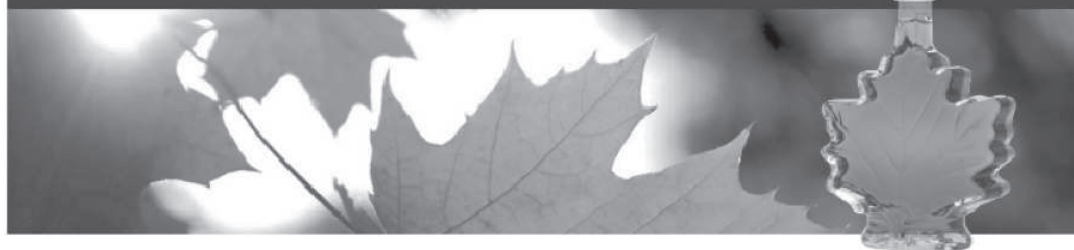
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**Succession: continued from page 21**

nical assistance, and land access programs. The Northeast is fortunate to have organizations and agencies that help farmers find land, connect with landowners, and plan for the future of their land.

Land For Good ([www.landforgood.org](http://www.landforgood.org)), a New England-based nonprofit, specializes in land access and transfer. Its toolbox on farm succession contains numerous resource links and guides, including one for farmers without identified successors. LFG's state-based field agents provide succession coaching and facilitation. LFG and Farm Credit East will offer a three-session "Farm Succession School" starting in November 2016 in Vermont, New Hampshire and Maine. For more information on this, contact [info@landforgood.org](mailto:info@landforgood.org).

The Farm Transfer Network of New England ([www.farmtransfernewengland.net](http://www.farmtransfernewengland.net)) has a searchable database of lawyers and other professionals. There are many online tools such as retirement calculators and sample leases.

The Vermont Housing and Conservation Board and Massachusetts Department of Agricultural Resources offer farm viability programs that support farm succession planning. Several land trusts such as Maine Farmland Trust ([www.maineFarmlandtrust.org](http://www.maineFarmlandtrust.org)) and Vermont Land Trust ([www.vlt.org](http://www.vlt.org)) work with farm owners and seekers. New England Farmland Finder ([new-englandfarmlandfinder.org](http://new-englandfarmlandfinder.org)) posts farm properties and links seekers and owners to other farm link programs and service providers. In some states, university extension services have specialists to assist with succession planning. Farm Credit East ([www.farmcrediteast.com](http://www.farmcrediteast.com)) also offers succession planning assistance. In areas outside New England, Cooperative Extension might be a good first contact.

Succession planning is a practical as well as emotional process. It's as much about legacy as it is about taxes – maybe more. Successful planning takes time, and it takes a team. It's never too early and it's never too late to start succession planning.

## Thank you to our Research Alliance Partners

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# Ask Proctor



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**W**hat causes syrup to be light or dark at different parts of the season?

Maple producers understand that syrup undergoes changes in color and flavor during the season, generally progressing light-colored and light-flavored syrup in the early part of the season to darker and stronger tasting syrup towards the end. At some points, syrup may get light again before continuing the trend towards darker syrup. So what are the dominant factors that affect these changes?

Without getting too buried in the chemistry, there are two major factors involved: changes in sap (especially sugar) composition due to microbes and degree of caramelization during evaporation.

The sugar that comes out of maple trees is predominantly sucrose, which is a large polysaccharide containing 12-carbon units. Microbes that are present in the environment, especially those in sap buckets, tubing, collection tanks, and filters feed upon the sugar in sap to fuel their own metabolic and reproductive processes. The higher the temperature of the sap, and the longer sap sits before processing, the higher the microbial load becomes. During feeding, the microbes break down 12-carbon (sucrose) molecules into two 6-carbon sugars, glucose and fructose. Breaking the chemical bond holding the two 6-carbon units together releases energy that the microbes can use. As the microbes continue to feed, a portion

of the sucrose is converted into glucose and fructose, also called “invert” sugars (known as such due to the way polarized light passes through them). Even in fairly heavily contaminated sap, only a fairly small percentage of sucrose is actually hydrolyzed into glucose and fructose, most of the sugar in sap remains as sucrose.

“Invert” sugars are more active in many types of chemical reactions that can occur in sap prior to boiling. The interaction of the these sugars with naturally-occurring amino and organic acids in sap can create some color and flavor (or off-flavor) development, and also lead to reactions that occur during boiling.

It turns out that, when boiled, pure sucrose solutions undergo very little color change and develop very little flavor (other than sweet). As the invert level of sugar in the solution increases however, there is considerably more color and flavor development. This is mostly due to the fact that invert sugars caramelize at temperatures that are considerably lower than the caramelization temperature of sucrose. Therefore, the higher the invert level, the higher the degree of color and flavor development.

So how does syrup color get lighter at times during the season? This happens because cold temperatures can kill some of the microbes in the lines and slow growth in those that remain (growth and reproduction of microbes

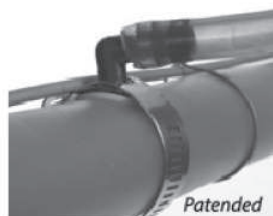
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**Ask: continued from page 25**

is highly influenced by temperature). High sap flows also reduce the concentration of microbes in sap, resulting in less invert sugar development (at least for a period of time). So after a couple of good runs, the syrup may lighten somewhat.

That explains the general way that light or dark syrup is made, but why does syrup that has already been produced get darker as you boil it longer or even as it sits for a long period of time in a plastic jug. Even though sucrose caramelizes at a high temperature, prolonged boiling can darken syrup. This occurs due to very tiny particles of burnt sugar and sugar sand on the bottom of the pan which create hot spots in the pan. Sucrose trapped in those small spots can be boiled hot enough to caramelize, thus causing syrup that is reheated or boiled for a long time to con-

tinuously get darker. In plastic syrup jugs, a small amount of oxygen can permeate through the container, resulting in oxidation (a process similar to rusting of metals), which also causes syrup to darken. Newer styles of coated jugs are less prone, but not completely immune to this problem.

If we wish to make light syrup, the key factors in doing so are fairly straight-forward. Keep sap clean (filter well immediately upon collection), keep it cold, and process it quickly.

*Dr. Tim*

*Ask Proctor is a new feature in the Maple Syrup Digest, where researchers from the University of Vermont's Proctor Maple Research Center will answer questions about sugaring. If you have questions you'd like to submit for consideration for use in this column, please send them to [editor@maplesyrupdigest.org](mailto:editor@maplesyrupdigest.org).*

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## Sap Collection from Small-Diameter Trees

*Timothy Perkins and Abby van den Berg,  
University of Vermont Proctor Maple Research Center*

**F**or several years, we conducted research on the collection of sap from small-diameter maple trees. This document outlines the basic concepts, techniques, and applications of this type of sap collection.\*

The fundamental premise of this type of sap collection is that sap is collected from the cut surface of small-diameter trees rather than through a taphole drilled in a larger stem. Initial cuts on intact trees are made approximately 5-6' above ground level at a height reasonably convenient for running tubing (Figure 1). The cut is most easily accomplished using a sharp bow-saw. Sap is collected from the cut surface of the stem using a cap-type fitting connected to a tubing system with vacuum (Figure 1). Vacuum is necessary; otherwise sap flows will be negligible. The cut to the stem needs to be as clean as possible to facilitate optimum sapflow, and care should be taken not to damage remaining bark tissues during the cutting process. The area of the stem where the cap is placed should be as smooth and free from defects as possible to facilitate a vacuum-tight fit. A clear zone of smooth bark approximately 3-4" long should extend below the cut to allow a good seal with the sap

collection cap. Good sanitation practices should be used to avoid contamination of the cut stem. The cut top of the tree could be put aside and used later for mulch or fuel. The stem should be cut immediately before significant sap flows would be expected to occur.

The basic physiological processes that underlie sap collection from small-diameter trees are the same as those in mature trees – sugar is loaded into sap in response to fluctuating freezing and thawing temperatures, and sap flows require above-freezing temperatures. Because of this, sap collection with small-diameter trees will frequently begin and end at similar times to mature forest trees, and the season will also proceed similarly and mirror that of mature trees. Larger sap flows and higher sugar contents will typically be observed after freeze-thaw fluctuations. Sugar content and sap flow will gradually decrease over time during above-freezing temperatures, and sap flow will ultimately cease when freeze-thaw fluctuations end and warmer temperatures lead to decreased sap flow and the development of unfilterable and/or off-flavored sap. However, these factors can sometimes be modulated in small-diameter trees since they may, under certain conditions, thaw earlier and faster than forest trees due to their relatively small size and, in some cases, open-grown locations that facilitate warmer localized conditions than in the forest. The top of the tree is not essential for any of these to occur – sugar is loaded into sap from cells

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\* Please note that the methods, system, and devices described in this document are covered under claims of US Non Provisional Patent Application 14/381,884 and cap fittings required to implement sap collection from small-diameter trees are not yet being commercially manufactured.

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**Saplings: continued from page 29**

in remaining stem and root tissues, and localized above-atmospheric pressures develop. However, because head pressure is not present, the use of vacuum is absolutely required for sap collection from small-diameter trees.

Cutting the stem and collecting sap from the entire surface is essential for sap collection from small-diameter trees. The surface area available for sap collection is significantly larger than what is accessed with a standard taphole and spout and because of this, collecting sap from cut stems results in greater sap yields than trees of the same size tapped with a standard taphole and spout. Cutting the stem and removing the top is not typically lethal to young saplings. Rather, new branches and leaves will sprout from dormant buds

located under the bark of the remaining stem during the following growing season as long as two conditions are met: 1) the tree is exposed to a reasonably good amount of light, and 2) the tree is of sufficiently small diameter, generally < 4" dbh. For these reasons, sap collection from small-diameter trees is generally appropriate only with open-grown trees that are less than 4" dbh. Just as in mature, intact trees, leaves from the new growth will photosynthesize and produce sugars that will be stored in the stem and root tissues, and ultimately harvested during sap collection in subsequent maple production seasons. However unlike mature trees, sugar storage and access is concentrated into a much smaller area.

Trees can be re-cut for sap collection

*Saplings continued on page 32*



Figure 1. Sap collection from small-diameter trees. Trees before cutting (upper left), sap collection from cut trees (lower left), and regrowth from cut stems (right).

### ***Saplings: continued from page 31***

the subsequent season after re-sprouting. The new cut is made lower on the stem, generally between 6-12" below the top, at a location beyond the majority of the stained wood generated in response to the previous year's cut (note that sometimes the central portion of the stem is stained naturally). The fresh cut surface should be predominantly clear, white wood. Re-sprouting and new growth will generally occur again during the following growing season, and the process can be repeated with successive annual cuts made in a similar manner until useable stem is exhausted, or sap collection from the remaining stem becomes difficult due to logistical factors (low height, etc.). This type of sap collection can also be performed with multiple-stem trees, in which several stems originate from a single root system (Figure 2). In multi-stem trees, each annual cut is made on a new, previously uncut stem until all intact stems are used; subsequent cuts are made as described for single-stem trees (Figure 3), but rotating among available stems.

Sap yields from individual small-diameter trees are very low compared to larger trees used for standard maple production, generally between 2-5 gallons of sap, and 0.02-0.07 gallons of syrup equivalent per tree. The optimum diameter is 2-2.5" – sap yields from trees smaller than this tend to be substantially lower, and this method should not be used with stems less than 2" in diameter because smaller saplings will have fewer years to harvest, less robust resprouting, and considerably lower sap yield. Sap yields from a single stem of a multiple-stem trees are typically greater than those from single-stem trees. While yields per in-

dividual tree are quite low, the small size of these trees allows for large numbers of trees to be planted and grown in small areas, enabling substantial sap yields in aggregate from a limited land area. For example, at a planting density of 1,000 trees per acre, this system could result in total annual syrup yields of up to 70 gallons per acre. Thus, using this technique, maple trees could be planted and grown on open, flat land as a perennial agricultural crop, similar to vineyards or high-density apple orchards. Using nursery stock with a genetic predisposition for higher sap sugar content could substantially increase the yields obtainable per acre. Considerable additional research is required to determine the appropriate techniques and to do cost/benefit calculations on this approach.

Perpetuation of sap collection from small-diameter trees over the long-term in a crop system can be accomplished using a variety of strategies. Because of greater sap yields and the relative ease of long-term annual sap collection, multi-stem trees are likely the optimum tree type to be used in this application. In this type of system, individual maple saplings are planted, and "coppice" cuts are subsequently made at the base of the stem in order to promote a multiple-stem growth form. Sap collection can begin when individual stems reach 2" in diameter, and annual sap collection can continue as described previously using intact stems first, and then using previously cut and re-sprouted stems, until useable stems are exhausted. At this point, coppice cuts could be used to initiate new, multi-stem growth from the existing root systems. If tree growth is too rapid, sap could be collected from more than one stem per season, although yields are likely to be impacted to some degree.



Systems with single-stem trees are also possible – sap collection can begin after planted saplings achieve 2" in diameter. Similar to the multi-stem system, new growth could be initiated from the root system with coppice cuts when the useable stem was exhausted. In both system types, rotation strategies would be required to ensure sap collection could continue annually during the period when new stems were being regenerated on the original trees. This would occur more frequently in a single-stem system.

Alternatively, in some circumstances it may be possible to use a strategy in which subsequent cuts are postponed to allow new branches to develop an adequate diameter for sap collection. However, yields from these branches may be lower than those obtained from the main stem.

This system facilitates maple production on land previously unsuitable for maple production (e.g. flat, nonforested), and using less land area than is required in the traditional maple sap harvesting system, which requires large areas of forested land with mature maple trees. It also expands the scope of the type of crop and harvest system able to be used for maple syrup production from a wild-crop system in which sap is collected from existing trees in a mature forest, to a planted and cultivated perennial agricultural crop. In doing so, it creates and expands opportunities for maple producers to increase their production and grow their businesses, or initiate new operations. It also creates opportunities for farmers to plant and cultivate maple to produce maple syrup as one of their diversified agricultur-

al crops. It must be emphasized that this is not a system that would replace standard maple production. There is currently no overall net economic advantage to this approach. For example, reduced costs in land acquisition and maintenance (taxes, thinning, road construction, upkeep) for syrup production from large trees are offset by costs of planting stock and intensive plantation management. Additionally, sap collection from small-diameter trees still requires the same climatic conditions as standard maple production – a period of winter dormancy followed by fluctuating above- and below-freezing temperatures. This system could simply provide an alternative perennial crop for farmers, or a means for maple producers to expand or initiate

*Saplings: continued on page 34*



Figure 2. Multi-stemmed tree cut for a second year of sap collection. Note the prior year's cut stem with resprouted new growth to the right.

operations without the need for adding significant amounts of acreage. In addition to these potential benefits, this system may provide a means to mitigate to some degree the reduction in freeze-thaw cycles expected as a result of climate change, since small trees are likely to require smaller temperature fluctuations around the freezing point to induce sapflow. Moreover, this technique and system could also be used to collect sap from other sap-producing species, including birch, walnut, maple species not typically used for maple production, and others. Further research is needed in this area.

To date, our research has been conducted on individual, pre-existing small-diameter single- and multi-stem trees, and we have not completed studies in which trees have been planted expressly for this type of sap collection and subsequently used for harvest. There are numerous aspects of this type of sap collection and system that will require extensive research to gain a fuller understanding, and for development, refinement, and optimization, and on which research has not been conducted to date. These include all facets of establishing and managing crop systems, including optimum planting densities and organization, optimum characteristics of nursery stock (age, species, etc.), the length of time required for trees to reach harvestable diameter, and optimum harvest rotation strategies to facilitate sap collection in the long-term. For multi-stem trees in particular, the timing and best methods of coppice cuts used to stimulate the multi-stem growth form, as well as any pruning or training required to achieve an optimum growth form for sap collection, will also require

research to determine. In addition, other factors such as practices required for organic production, fertilization and irrigation requirements, weed and pest management strategies, and long-term sap yields from trees in crop systems, will also require investigation. The planting and management system developed by the Willow Project at the State University of New York College of Environmental Science and Forestry (SUNY-ESF) for willow biomass plantations provides useful information and insight into a similar system, however not all practices are applicable to a system for maple production ([www.esf.edu/willow/](http://www.esf.edu/willow/), [www.esf.edu/willow/documents/ProducersHandbook.pdf](http://www.esf.edu/willow/documents/ProducersHandbook.pdf)).

### **Sap Collection from Regenerating Stands**

While primarily applicable for circumstances in which trees are planted in open-grown conditions and grown for subsequent sap harvest, there are other instances in which large numbers of small-diameter maple trees already exist. Can this system be used in these circumstances? A key requirement for the long-term perpetuation of this system is the resprouting and regeneration of new growth from the cut stems, which requires a sufficient amount of light. This factor will ultimately limit the application of this system in situations outside of open-grown conditions

Stands that are regenerating after being cleared for pasture or harvest are often comprised of a large number of small-diameter maple trees. If the ultimate goal in these stands is to develop a mature sugarbush used for traditional maple production, thinning must be conducted in order to promote the growth and crown development of future crop trees. For example, in stands where the average tree diameter

is 2" (in which densities can be as high as 5,000 or more trees per acre), it is recommended that an initial thinning be conducted to retain approximately 200 crop trees per acre.<sup>1-3</sup> It may be possible to combine the task of thinning with sap collection from small-diameter trees for a few years in order to obtain some production and income from syrup produced in the stand during the development of the stand into a mature sugarbush. This approach would help to offset some of the cost of thinning and other forest management in young stands being ultimately developed into a sugarbush.

We have conducted some preliminary investigation of sap collection from trees in regenerating stands to determine the sap yields attainable from these trees and the level of resprouting

achieved in these lower-light conditions. We collected sap and quantified syrup yields from 24 small-diameter trees (average dbh = 2.3") in a regenerating stand during the 2015 production season. The results of this study indicated sap yields from these trees were relatively low, between 0.02 and 0.06 gallons of syrup equivalent per stem, although this was from a single very short collection season (4/1 – 4/18/15). Despite the generally lower light conditions experienced by these saplings, regeneration of the cut stems the following growing season was quite good. Many saplings had vigorous regrowth, and only 1 of 24 trees failed to resprout. Thus, it appears likely that sap collection from small-diameter trees in regenerating stands could be combined with thinning to promote the development

*Saplings: continued on page 36*



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### **Saplings: continued from page 35**

of crop trees, however the sap yields may be relatively low, and resprouting would ultimately be limited by the amount of available light. Whether the economics of implementing this practice would be favorable would largely depend on the specific circumstances of each individual situation, including the number of trees per acre available for sap collection, the availability of existing tubing systems in the area, and the costs of thinning.

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### **Acknowledgements**

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## **In Memoriam: Karen Mae Haigh**

Karen Mae Haigh, 73, of Bellevue, Michigan, died peacefully on Thursday, July 28, 2016 in Charlotte. Karen was born January 24, 1943 in Charlotte, the daughter of Harold Richard and C. Lucile (Dingman) Maurer. She graduated from Olivet High School and earned a degree in sociology and education from Olivet College in 1966. Karen taught pre-school for 35 years in Bellevue Schools. On May 29, 1965, she married Larry Haigh. Together, they produced maple syrup for 40 years; many will remember Karen's award-winning

Maple Syrup confections. They were very active with the Vermontville Maple Syrup festival as well as the Michigan Maple Syrup Association and the North American Maple Syrup Council/International Maple Syrup Institute, for which they travelled throughout the continent. She led 4-H for 25 years and was a long-time member of West Benton Church. Larry and Karen were also members of Michigan Farm Bureau. Above all, Karen valued time spent with her family and friends.

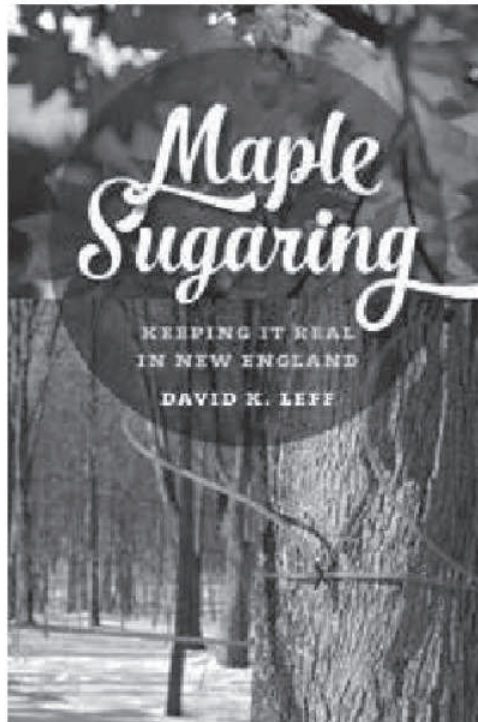
# Maple Sugaring: Keeping it Real in New England

Amy Nawrocki

Stately, almost regal in their maturity, sugar maples are attractive year round. Not long after the last drop of sap is collected and taps pulled, they become covered with lacy, pendant green flowers that suffuse the landscape with yellowish haze." New Englanders know this scene well and David K. Leff's book brings us closer to these legends and their delicious syrup. *Maple Sugaring: Keeping it Real in New England* (Wesleyan University Press, 2015) feeds our appetite and invites us to get out and experience the difficult, amazing, intricate, and beautiful process of making and enjoying maple syrup. His writing is an affirmation of the senses, with a good dose of intellectual stimulation and emotional nourishment thrown in. But *Maple Sugaring* is more than just a casual nod to the region's favorite sweetener; it's an in depth study of the trees, the products, the processes, and the people who tend the forests and craft an industry. As Leff explains, "Maple syrup is a true marker of a place, a symbol of authenticity and deep heritage that is produced in one region of the world." The author begins by describing his own forays into the art of sugaring, and he uses his knowledge and passion to guide us into the back woods and to the sugarhouses across

New England.

More than a chaperone, Leff is a gifted storyteller, and so we come along for the journey as much as for the sweet, syrupy payout. (Recipes at the end of each chapter showcase maple's widespread culinary appeal.) We learn about methods that the Native Americans used to find and extract maple sap



as we become privy to the latest technologies that modern sugar makers use. We meet families and follow a tangle of tubing; we hear the sounds of boiling evaporators, and participate in the debates and delights. We see the value of waiting and of enduring, whether picking out the right spot for the spout or counting days and tracking weather as the sap gets ready to run; as we stand around the cauldron of the evaporator, waiting for the watery sap to bubble, thicken and become the amber gold we know and love; as we reminisce about grandfathers and childhoods and taste through memory.

Throughout, *Maple Sugaring* takes us from the tree and into the community. Leff sits with his subjects and samples their wares. And there is a lot to discuss—sugaring as a technique which

*Book continued on page 39*

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**Book: continued from page 37**

is so dependent on the environment; as an industry linked to our states' identities and to our livelihood as business owners and tourists; as a food item that competes with cheaper and less nutritious substitutes. Leff grapples with all of this, and with our globe's warming future and the ramifications that will affect sugaring directly. "Sugaring is not just about syrup; it [is] about man-

aging a living community of complex interactions." The novice, the foodie, the industry expert, and the weekend sugar maker are invited equally to participate. "Some people might think there's not much excitement in watching sap boil," but we New Englanders know better, and anyone who's willing to spend a little time in the pages of David Leff's book will be satisfied that they did.

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## News from Wisconsin

The Wisconsin Maple Syrup Association has been very busy promoting the Maple Industry. In June Executive Director, Theresa Baroun, family and friends put a WMSPA float in the Maribel Parade in Maribel, WI. They handed out coloring books, maple suckers, and ice cream with maple syrup on it to parade goers. In July they participated in Agri-Versity Day at the Dane County Fair. About 400-500 children learned hands on activities about making maple syrup. They got the chance to tap a tree, which was made from a maple log. After they tapped the tree they got to take the tap home. They also got a chance to make maple leaf stamps. Lastly, they were quizzed on various questions about making maple syrup. If they got the question right they received a coloring book on how to make maple syrup.

The WMSPA is also in the process of purchasing Ag Tourism Signs for producers to display on their properties. In the near future they also plan on producing a new cookbook. Details will be released soon on a cover contest and recipe contest. Individuals and businesses will also get the chance to put ads in it.

The state legislature is considering changes to R.O. regulations, adopting

the USDA scale, and changing licensing requirements. The Association is working on a position statement to present to the legislature about the proposed changes.

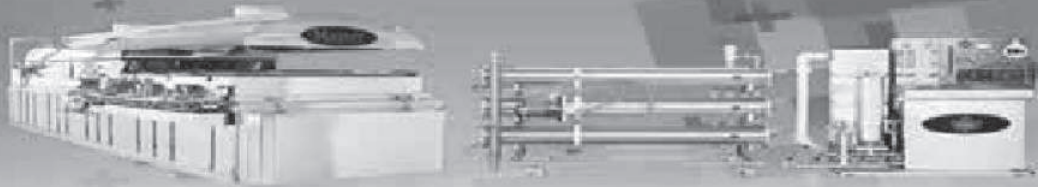
## News from Minnesota

The Minnesota Maple Syrup Producers' Association held their Annual Spring Members Meeting at the University of Minnesota Landscape Arboretum in Chaska, MN on May 21, 2016. The meeting ended with a fascinating and delightful tour of the Arboretum's educational sugaring operation and an engaging and inspiring tour of Riley Sugarbush in nearby Edina, MN. The meeting included the Association's first contest using the new syrup grades.

### Contribute to the Digest

We're always looking for news updates from provincial and state associations, producers, and businesses, as well as calendar items, photos, and ideas for articles. Send submissions to [editor@maplesyrupdigest.org](mailto:editor@maplesyrupdigest.org).

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Industry: IMSI

## International Maple Syrup Institute News

The Board of Directors of the International Maple Syrup Institute (IMSI) met at the OMNI Hotel in Montreal on August 3, 2016.

### 2016 Maple Crop: Supply, Demand and Pricing

Simon Trepanier of the Federation of Quebec Maple Syrup Producers reported that the 2016 crop of maple syrup in Quebec was 148 million pounds, an unprecedented yield for that province. It was reported that the majority of the syrup produced was of good quality and classified on the lighter side in color, with 122 million pounds graded so far. He reported that buyers are asking for more syrup this year, which is an indicator that demand is increasing and/or that buyers are building additional inventories of syrup.

The Regis des Marches Agricoles et Alimentaires du Quebec, a Marketing Board, recently approved the allotment of an additional 5 million taps over a period of 2 years to be allocated to both existing and start-up operations. About 72% of this allotment will go to existing maple producers and the remainder to start-ups. 18% of the new taps will be on Crown land and the remainder on private land. An additional allocation of taps is possible in the future if requested by maple industry representatives in Quebec. The Regis has also authorized the Federation to increase quotas allotted to Quebec producers as is deemed necessary in the future.

In the United States, the official estimate of production of maple syrup is about 46 million pounds. It was suggested at the IMSI Board meeting that

actual production may be as high as 60 million pounds. It is estimated that the number of new taps being added per year in the United States is about 1 to 1.5 million per year.

In 2016, continued growth of markets for both Grade A and Processing Grade maple syrup are helping to maintain balance despite production increases. Sales of maple syrup remain strong and are increasing by as much as 5 to 10% per year in some quarters. Prices continue to remain stable but there is uncertainty regarding whether or not this stability will be maintained in the medium and longer term. The maintenance of a strategic reserve of about 60 million pounds of syrup in Quebec has also helped maintain price stability in the marketplace over the years. A factor which can affect pricing and profitability, which is very unpredictable, is the Canadian-US exchange rate and this should be closely monitored.

The supply of certified organic syrup in Quebec has increased from about 22% of bulk syrup in 2015 to an estimated 25% in 2016. It is expected that more producers will become certified over the next several years due to the price premium for certified organic syrup and expanded market opportunities, especially in overseas markets.

Growth in markets may not be sufficient to fully absorb yield increases due to added taps, if overall yields remain high as in 2016. This points to the need for continued and enhanced efforts in marketing maple syrup so that demand is in reasonable balance with supply going forward.

*IMSI: continued on page 42*

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*IMSI: continued from page 41*

## **Importance of Quality Assurance of Maple Products**

During the August 2016 IMSI Board meeting as well as at previous meetings, there was agreement among participants that IMSI and its members must continually work to help maintain the highest of quality standards in the production of maple syrup and other maple products. Discussion ensued about better ways to do that. It was agreed that enhanced awareness and education among producers continues to be very important.

The IMSI sponsored grading school and quality assurance training offered by Centre Acer are essential in helping maintain high quality assurance standards. In addition to these excellent training venues, state and provincial associations are encouraged to offer quality assurance workshops tailored to their specific needs. Those who have attended the IMSI sponsored grading school in the past are encouraged to share their knowledge with their peers at the state/provincial level.

The organizers of the IMSI sponsored grading school are also exploring opportunities to engage other educators in quality assurance training, including training related to the classification and grading of maple syrup.

The IMSI sponsored grading school will be offered in conjunction with the Annual Meetings of the North American Maple Syrup Council (NAMSC) and IMSI in Burlington, Vermont in October. Other offerings of the Grading school are under discussion for 2017.

IMSI members and others can learn

more about the IMSI sponsored Grading School and its upcoming offerings by accessing the University of Maine – Cooperative Extension website with the following link: <http://extension.umaine.edu/maple-grading-school/>. Applicants for the grading school may register on-line.

If additional information regarding the IMSI sponsored grading school is required, please contact Kathy Hopkins at 207-474-9622 or [khopkins@maine.edu](mailto:khopkins@maine.edu).

## **Marketing Strategy for Real Maple Products**

In 2015, both the Board of Directors of the IMSI and the NAMSC endorsed a marketing strategy for maple syrup primarily focused on North America. The IMSI has finalized work on the development of a generic marketing program based on a goal to double sales of maple syrup over the next seven years. Representatives of maple producer associations, maple packer representatives, educators, marketing consultants and individual producers have assisted the IMSI in the development of this plan. The IMSI has also developed a marketing implementation plan (MIP), which outlines a number of work activities, which would be beneficial to the maple syrup industry. This Marketing Implementation Plan was approved by the IMSI's Board of Directors in May of 2016.

Two working groups with representatives from the U.S. and Canada have been established to focus initially on the development of uniform messaging regarding maple syrup and other real



*IMSI: continued on page 44*

**IMSI: continued from page 43**

maple products and secondly to identify sustainable sources of financing for generic marketing of real maple products. The Maple Slogan and Messaging Team met in Montreal on August 2 and finalized some recommendations regarding an approach to slogan development and messaging. This included principles regarding use of the slogan and messaging once it has been developed. This also included an initial assessment of words and options for a slogan.

Ray Bonenberg, Project Leader for Slogan Development and Messaging presented the output from discussions of the working group to the IMSI Board of Directors on August 3. Following discussion, it was decided that the next phase would be to design a consumer survey and solicit input directly from

consumers regarding the slogan messaging. Dr. Michael Farrell of Cornell University has agreed to lead this phase of the project in close collaboration with the IMSI Maple Slogan and Messaging Team

The IMSI has also established a Sustainable Sources of Financing Team to explore options to finance collaborative maple marketing efforts.

### **Misrepresentation of Maple in the Marketplace**

The IMSI and a number of IMSI member state maple associations have supported the recent efforts of the Vermont Maple Sugarmakers' Association (VMSMA) which attempt to address the issue of misrepresentation of maple in the market place with the FDA. The FDA has advised VMSMA as well as a number of other State Maple Asso-

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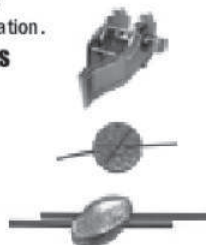
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ciations that the onus is on the maple industry to clearly define real maple products including maple syrup if they want a degree of protection through regulation. For example: should maple syrup be defined as an ingredient or a flavor and what would the implications be? It is unlikely that the maple industry will ever achieve exclusivity on the use of the word maple on product labels, but can work to fully define real maple products to help set them apart from fake products or knock-offs. The industry can also recommend provisions in regulations to limit false or misleading advertising.

The IMSI and some individual IMSI members have also alerted government regulatory agencies of the need to address the maple misrepresentation issue in circumstances where amendments to maple regulations are being

considered or currently are underway (i.e. Ontario, Wisconsin, Canadian Federal government). In 2014 the IMSI developed a position statement on maple misrepresentation, which is being used as a primary reference.

It was agreed at the IMSI Board of Directors meeting that the IMSI's Executive Director working cooperatively with IMSI Maple Association Directors from Canada and the General Manager of the Maple Industry Council (Quebec) will arrange a meeting with representatives of the Canadian government regarding maple misrepresentation and related regulatory instruments and their enforcement. This includes the Consumer Packaging and Labelling Act (CPLA) as well as other pertinent regulations which are currently under development.

*IMSI: continued on page 47*



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The Institute continues to be a member of the American Origin Products Association (AOPA) and to support its ongoing efforts in advocating for product authenticity and is beginning evaluation of the benefits of including maple under the International Codex Alimentarius certification. Later in 2016, Federation of Quebec Maple Syrup Producers will be working to facilitate a meeting of IMSI representatives with Canadian government officials to begin discussion regarding the merits of Codex as well as the process required to achieve Codex Certification for the maple industry.

#### **Nutritional Labelling: Proposed Harmonization and FDA Definition of "Added Sugar"**

Concern was expressed at the IMSI Board meeting that current nutritional

labeling of maple syrup is quite variable and that it would be very advantageous to develop harmonized labeling specifications which are ready for the roll out of new FDA requirements. Harmonization would set one standard for industry application in the United States, removing inconsistencies and some confusion which is associated with existing labels. The IMSI Board approved that the Executive Director would facilitate follow-up with Maple Quality Assurance Specialists employed by Maple Packers and Maple Researchers from both Canada and the United States with the aim of coming up with standardized nutritional label specifications. Since the August IMSI Board meeting a Task Team primarily of Maple Quality Assurance Specialists has been working on the development of proposed harmonized label speci-

*IMSI: continued on page 49*



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**Marathon Machine 715-257-1023 [www.sapmeister.com](http://www.sapmeister.com)**

The advertisement features a large, detailed image of a Sap-Meister tubing spout. The spout is cylindrical with a flared end and a smaller, narrower section. It is shown against a dark background with a tree trunk visible on the left. The text is in a mix of bold, serif, and sans-serif fonts, with some elements in italics. The overall design is clean and professional.

# North American Maple Syrup Council Research Fund

The NAMSC Research Fund funds research that supports and advances the maple industry. In recent years we have given tens of thousands of dollars to projects that have developed innovative practices and technologies, helped deepen our understanding of the science of sugarmaking, and promoted the products we all make.

## You can make a difference!

Concerned about the future of the Maple Industry? Make a contribution to support the maple research we fund. One easy way is to pledge to send \$.01 per container to the NAMSC Research Fund. Grant recipients are announced at NAMSC Convention each October.

## Research Alliance Partners

Dominion and Grimm U.S.A.  
Haigh's Maple Syrup & Supplies LLC  
Hillside Plastics, Inc  
Indiana Maple Syrup Association  
LaPierre Equipment  
Maple Hollow  
MA Maple Producers Association  
Technologie Inovaweld, Inc  
Sugar Bush Supplies Co.  
VT Maple Sugar Makers' Association  
WI Maple Syrup Producers Association

*Please thank them when you do business with them.*

## Research Fund Contribution Form

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip/Country \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Amount of Contribution \_\_\_\_\_ containers x \$.01 = \$ \_\_\_\_\_

*Suggested Contribution is \$.01 per Container. Send to Treasurer Joe Polak at the address below.*

For more information contact:

Winton Pitcoff, Chairman: PO Box 6, Plainfield, MA 01070  
413-634-5728, editor@maplesyrupdigest.org

Joe Polak, Treasurer: W1887 Robinson Drive, Merrill, WI 54452  
715-536-7251, fax 715-536-1295, joe@maplehollowssyrup.com

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



**IMSI: continued from page 47**

ications which at minimum must meet the new FDA requirements.

Since the IMSI Board meeting in early August, concern has been expressed regarding the FDA's requirement for "Added Sugar" to be placed on the label of maple syrup once the new FDA rules are effective. Both the IMSI and the National Honey Board have now gone on record seeking an exemption to this requirement. FDA officials have indicated that they are willing to discuss our concerns further and consider options to address industry concerns. The IMSI will be working with the National Honey Board to follow up.

### Maple Contest Guidelines

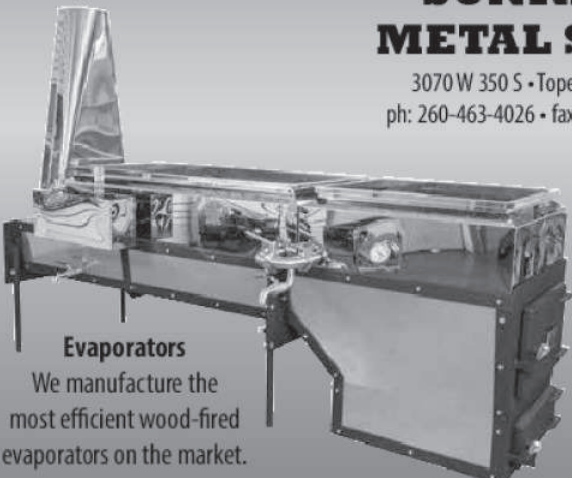
The IMSI has worked cooperatively with maple educators in Canada and the United States as well as the North

American Maple Syrup Council to prepare uniform contest guidelines for use by judges at the various contests (e.g. Royal Winter Fair, Agricultural Fairs, etc.) in both Canada and the United States. In particular, there was a need to ensure that the contest rules are consistent with the new international classification and grading system for maple syrup. The IMSI Board of Directors endorsed the guidelines at their May meeting and it is anticipated that the NAMSC will consider a similar endorsement at their Delegate meeting in October.

*More information about any of these projects and activities can be obtained from IMSI Executive Director Dave Chapeskie, at [agrofor@ripnet.com](mailto:agrofor@ripnet.com).*


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# NY Schools and Workshops

**October 8:** Maple Value Added Workshop, Ontario County, Contact: Russell Welsler, Cornell Cooperative Extension Ontario County, 480 North Main Street, Canandaigua, NY 14424, Phone: 585-394-3977, Fax: 585-394-0377, e-mail [rw43@cornell.edu](mailto:rw43@cornell.edu)

**October 22:** Maple Value Added Workshop, Broome County, Contact: Laura Biasillo, Cornell Cooperative Extension-Broome County, 840 Upper Front St., Binghamton, NY 13905, (607) 584-5007, [lw257@cornell.edu](mailto:lw257@cornell.edu)

**December 3:** Southern Tier Maple Program, Contact: Brett Chedzoy, Cornell Cooperative Extension - Schuyler County, Agriculture and Natural Resources, office: 607-535-7161; cell: 607-742-3657; [bjc226@cornell.edu](mailto:bjc226@cornell.edu)

**December 10:** Onondaga County Maple School, Contact: Kristina Ferrare, Cornell Cooperative Extension of Onondaga County, The Atrium, 2 Clinton Square, Syracuse, NY 13202, 315-424-9485 ext 231, 315-424-7056 – fax, [www.ExtendOnondaga.org](http://www.ExtendOnondaga.org)

## 2017

**January 6-7:** New York State Maple Conference, Verona NY, Contact: Keith Schiebel; [kschiebel@vvschools.org](mailto:kschiebel@vvschools.org) or go to [cornellmaple.com](http://cornellmaple.com)

**January 14:** Western NY Maple School, Contact: Deb Welch, Cornell Cooperative Extension of Wyoming County, 401 North Main Street, Warsaw NY 14569; 585-786-2251; [djw275@cornell.edu](mailto:djw275@cornell.edu)

**January 20:** Lewis County Maple Production for the Beginner, Contact: Michele Ledoux, Cornell Cooperative Extension Lewis County, 5274 Outer Stowe Street, P.O. Box 72, Lowville,

New York 13367; 315-376-5270; [mel14@cornell.edu](mailto:mel14@cornell.edu)

**January 21:** Lewis County Maple School, Contact: Michele Ledoux, Cornell Cooperative Extension Lewis County, 5274 Outer Stowe Street, P.O. Box 72, Lowville, New York 13367; 315-376-5270; [mel14@cornell.edu](mailto:mel14@cornell.edu)

## Lake Erie Expo

The fifth annual Lake Erie Maple Expo will be held November 11 & 12 in Albion, PA. The program includes both indoor and outdoor workshops, ranging from tubing installation to value added products to sugarbush management. The trade show opens on Friday evening and runs all day Saturday, and will feature every major equipment manufacturer from the U.S. and Canada. Friday evening will feature a special presentation by Glen and Ruth Goodrich called Maple Sugaring: Past, Present, and Future. Saturday's agenda includes 40 workshops from researchers and other experts. The deadline for preregistration is October 28. For additional info see [www.pamaple.org](http://www.pamaple.org)

## Wisconsin Tour

The WMSPA will be hosting their 2016 Fall Tour on October 22 in District 5. The day will begin with Registration at Morley's Maple Syrup in Luck, Wisconsin, continue to High Point Maple Syrup which is located on the north slope of Polk County's highest point of elevation, and then to Morley's Maple Syrup. The day will end with a trip to Morley's Equipment Supply store that opened this year. For more information about the Fall Tour check out the WMSPA website [www.wismaple.org](http://www.wismaple.org).

## Subscriptions

*Most state associations include a Maple Syrup Digest subscription with your annual dues. Before subscribing, please check with your association to see if this is already a member benefit for you.*

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*If you're moving, please be sure to send us your change of address. The post office will not forward bulk mail.*

## Classified ads

**FOR SALE:** Equipment & Supplies from Bakers Maple. Lamb tubing, Bacon jugs, Marcland controls, Carrageenan for maple jelly, 1 1/2 lbs. for \$19.95. Used Beckett CF 2300 Oil Burner. Bainbridge, NY. [www.bakersmaple.com](http://www.bakersmaple.com).

**FOR SALE:** Operational Sugar House on 48 acres. Twenty miles NW of Concord NH. 450 gal. ss holding tank. 2x6 evaporator. 450 taps. \$279,900. 978-609-5806.

**Classified ads are free for Maple Syrup Digest subscribers (up to three lines)! Send your ads to [editor@maplesyrupdigest.org](mailto:editor@maplesyrupdigest.org).**

## Please Consider Including NAMSC in Your Estate Plan

The North American Maple Syrup Council has received a number of generous bequests from sugarmakers who wanted to ensure that the important work of our organization can carry on. Those funds help us promote the maple industry and support our members. Planned giving like this is a way for you to show your support for the maple syrup industry for many years to come. It's a simple process.

Contact your attorney for information on how to revise your will, or your financial institution, plan administrator, or life insurance agent for the procedures required to revise your beneficiary designations.

The information needed for your legal documents is: North American Maple Syrup Council, PO Box 581, Simsbury, CT 06070.

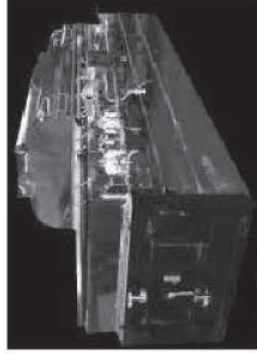


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