Backyard Maple

A Guide to Making Syrup at Home



VERMONT EVAPORATOR COMPANY

Kate Whelley McCabe



Thanks for purchasing a Vermont Evaporator Maple Syrup Starter Kit. This guide contains everything you need to know to get started making maple syrup. The information in this guide is organized by seasonal tasks, starting with fall, moving through winter and spring, and culminating in summer. For more information about maple syrup and related topics visit the blog on our website, where many of the chapters in this guide were first drafted. Happy sugaring!

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Late Summer → Fall

Identify your trees as the colors change
Note: Any maple will do!

Early Winter

Collect your tools and equipment

- Drill & Bit
- Taps & Buckets
- Sap Storage
- Evaporator
- Filters & Jars



The Backyard Sugar Maker's Calendar



Late Winter → Early Spring

Tap your trees. Sap flows during daytime thaws when nights are still freezing
as soon as sap flows, its time to boil!

Late Spring → Summer

Clean and store tools and equipment
Source and stack sugar wood for next year
Take care of your sugar woods!

Identifying Your Maple Trees

It's here. Fall! It's walk-in-the-woods time in sugar country. The leaves have started to turn, the air is crisp, the world is letting out the annual sigh of relief. Almost rest time. A great time for you to make good on your goal of identifying some maples (or some *more* maples) for your beginner backyard maple sugar making operation!

Did you know? Any maple that is ten inches in diameter at chest height will do. So grab a tape measure and some marking tape, and get out there!

To ID Trees, You Need:

_ This Book
_ Tape Measure
_ Marking Tape

We sugar mostly with red maples. The sugar content of the sap is lower than with sugar maples, so it takes a bit more work, but the syrup tastes just the same. And reds are what we have. So we use them.

Red maples are also called “swamp maples.” They live in swamps, bottomlands and uplands in moist soils. They are hearty trees, grow to 50-70 feet tall, and presumably get their



Red Maple Leaves

name either from the scarlet color they turn in the fall, the color of the winged seeds they produce in the springtime, or both.

Red maples will tolerate a wider range of conditions than the sugar maple, including variations in the climate, so even for us amateur makers, it's worth knowing your reds, even if you have plenty of sugars. Science suggests they will fare well despite our warming climate. So, as it happens, there's a little good news to take with the bad.

The leaves of a red maple are from three to six inches wide. They look to me like they are three lobed rather than five lobed (lobes are the sections of the leaf), although technical definitions seem to allow for both. And they have a saw-toothed, jagged edge to them with not a

smooth curve anywhere.

Our sugarbush is very dense, so most of the leaves are far enough up in the air that we have to squint a bit to see them. But, we were able to find a few leaves around the base of our reds as proof that we had squinted effectively.

And then there are the sugars. Sugar maples, so named because of the high concentration of sugar in their sap, grow even bigger than red maples, 60-80 feet, and naturally occur in rich, moist soils in uplands and valleys. In addition, however, sugar maples have been planted along roadways and at the edges of pasture lands for hundreds of years, and can still be found thus anywhere that farming is or ever was.



Sugar Maple Leaf

The leaf of a sugar maple is three to five inches wide and has five lobes, with a smooth, curved edge where the leaf of the red maple is jagged. (In the fall, sugar maples are likely to look multicolored, showing green as well as hints of yellow, orange and/or red as their chlorophyll recedes.)

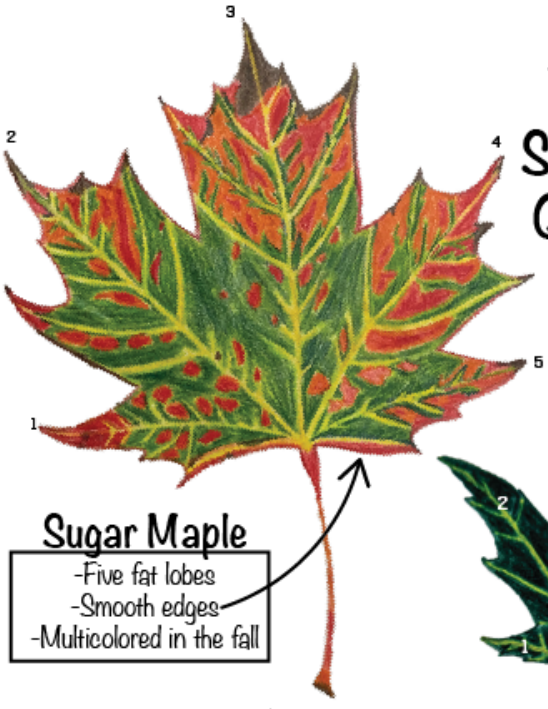
The few sugar maples we have are out in the open, and so have developed a crown that extends far enough toward the ground so that we don't have to squint or forage for ground-leaves to make my identification. The sugar maple is so iconic. It's the Canadian flag! It's as easy as that.

No reds or sugars? No problem! There are several other trees in the maple family that will do.

Sap yields from silver maples are lower in volume and sugar concentration than the sugar maple, but are still commonly tapped for backyard syrup making. Norway maples, bigleaf maples, and boxelders (part of the maple family and known by many names, including "river maple") produce significantly less concentrated sap than the sugar maple but nevertheless can be (and are) tapped to make syrup.

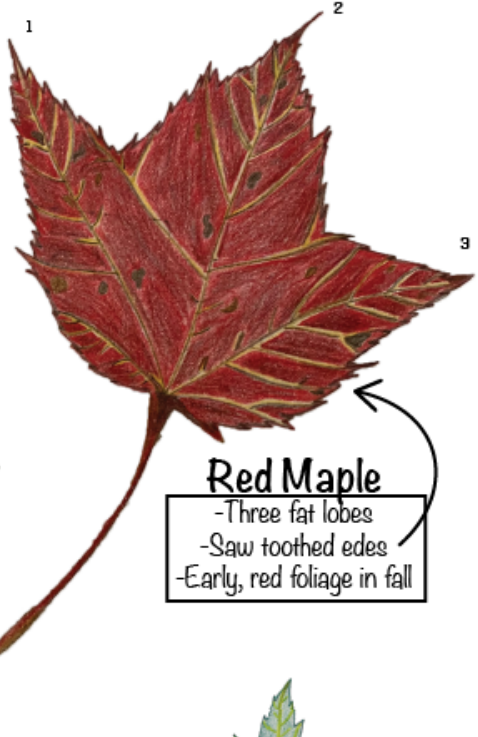
So if you're thinking about sugaring next spring, don't underestimate the value of taking a short stroll through your woods to map out your sugar stand now. Before you know it, those leaves will be falling!

The Hobby Sugar Maker's Quick Tree ID



Sugar Maple

-Five fat lobes
-Smooth edges
-Multicolored in the fall



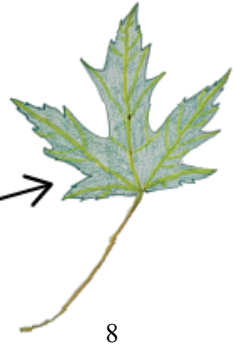
Red Maple

-Three fat lobes
-Saw toothed edes
-Early, red foliage in fall



Silver Maple

-Five skinny lobes
-Smooth edges
-Light green ("silver") on underside
-Late to turn in fall



Sourcing Sugar Wood



Split and Stacked Sugar Wood

It was a perfect fall day in New England, so, naturally, it's time for us to put in supplies for next spring's backyard maple sugar making operation. If we were good little Vermonters, of course, we would have done this task the very minute the snow melted. Clearly, we're still assimilating.

This task is easy enough for us to do. We've got chainsaws, a log-splitter, and the bucked-up remnants of 50 or so giant white pine trees we cut down several years ago to make room for the sun (and protect the house). We've heard from many customers that their sugar wood comes from trees that fall on their property naturally. But what if you don't have all those trees? And what if you're a new sugar maker and don't know anything? Well, keeping in mind we're only several years into this journey ourselves, here's what we know.

First, on quantity and composition. For our annual 25-50 tree

operation, we use between one-half and one cord of wood–almost exclusively soft wood. Any wood can be used to sugar, but most sugar makers agree that softwood–which burns fast and hot and then disappears from your wood box–rather than hardwood–which burns cooler, slower and sticks around in the form of coals–should make up the bulk of one's supply. Although many experts swear by a mix of the two!

For Sugar Wood, You Need:

_ Mostly Soft Wood
_ Split Thin
_ 1 Cord per 10 Gallons of Syrup to be Produced

What about width and length? Split your wood down until it is nice and thin–the width of your upper-arm, a two-by-four, or a big baseball bat. And while length depends upon the size of your wood box (for the Sapling Evaporator, we recommend no longer than 24 inches), it is true that longer cuts of wood will help you even out the heat under your pan. Also, fewer cuts means less work.

How about timing? Summer really is the time to split, stack, and cover your sugar wood supply, so that, come spring, it is nice and dry. We weren't kidding about us-

ing "snow out" as your cue, though. We've heard from customers that put in their sugar wood as early as April! And, not to fear, plenty of us wait until the fall, "better late than never" being an appropriate adage for this circumstance.

But what if you don't have the wood? Get on the phone and call around to the saw mills in your area. Ask them if they have "slab" wood (slab wood is what's left over when a tree is squared off to make boards) or scrap wood for sale, and if they deliver. When we tried it ourselves, within five minutes of hopping on the phone, we were able to find two sawmills within 60 miles of my home that would sell us such wood. One for $25 per truckload and one for $10. Both "you pick," so to speak, but still, not bad!

Failing that, get creative! Local businesses often have stacks of wooden pallets with which they would be happy to part. If they aren't stamped with an indication that they are chemically treated, the pallets should be environmentally safe to burn. Pallets are dry, and come split for you. And, although you will need to hack them apart and cut the pieces to length, you can do so with simple tools like a crowbar and handsaw as long as you've got enough energy or help. (Just make sure you put those nails in the metal recycling when you're done!) It's been done. And by our customers, to boot.

That's really all there is to it! And with that, it's back to the wood pile for us!

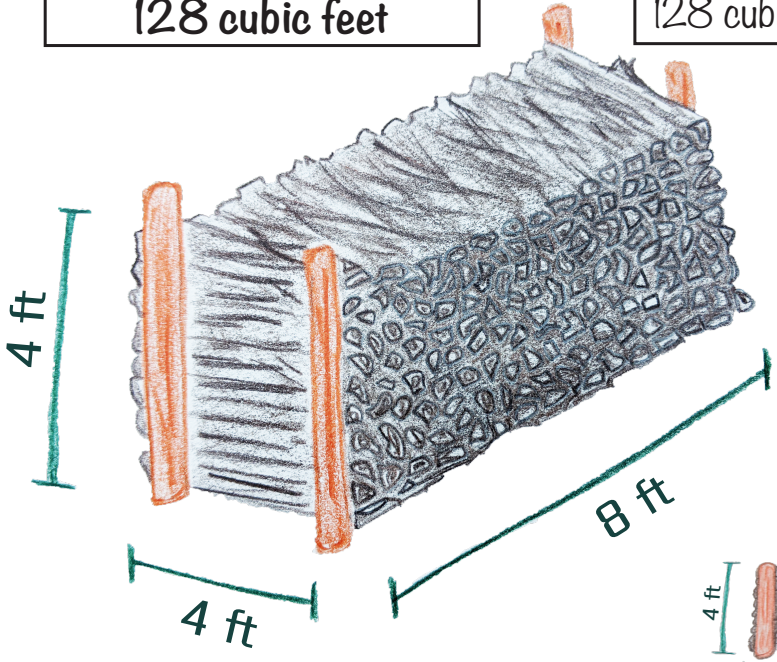


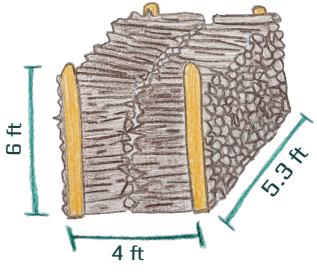
Sugar Wood Yet to Be Split

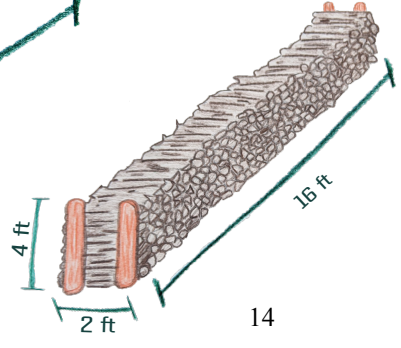
How To Measure a Cord of (Sugar) Wood

One cord of wood measures
4 ft x 4 ft x 8 ft
and has a volume of
128 cubic feet

However, you can have different size wood piles. As long as your volume measures 128 cubic feet, you have a cord.







Planning to Make Maple Syrup



Keep your Eyes on the Prize

You have identified your maple trees and, if planning to use wood as your source of fuel, you've acquired, split and stacked it to dry. Now it's time to fill out the contours of your maple syrup making plan so you can source the tools and equipment you'll be needing to get the job done!

Hobby Size

The size of a maple syrup operation is measured in taps, and determining the number of taps you are going to have is the first step in planning your operation. A maple tree is mature enough to be tapped once when it reaches ten inches in diameter, and twice when it reaches 18 inches in diameter. It is

not recommended to put more than two taps in any tree.

Count and measure your maple trees and determine how many taps you have. Maple syrup hobbies come in a variety of sizes ranging from five to 100 taps. If this is your first time sugaring, consider starting on the smaller side of what's possible. You can add taps each year as your interest and abilities grow.

When Planning, Consider:

_ Hobby Size
_ Wood or Fossil Fuel
_ Metal or Plastic Equipment
_Old or New Equipment

The size of your hobby will determine how many spiles and sap-catching containers you need for your trees, how much sap storage you will need, how much fuel you will need, how much time you will spend sugaring, and, of course, how much syrup you will have to show for it in the end! There are a lot of variables to consider. But here are some general ranges assuming a mixed stand of maple species.

For each tap, you will need one spile and one sap-

catching container to hang on the tree. That's the easy part! For each 25 taps, you will need 50 gallons or so of sap storage capacity and one-half cord or so of wood fuel. For each 25 taps, you should expect to make at least five and as many as ten gallons of syrup. Depending on the sugar content of your sap and how efficiently you boil, this could take you anywhere from five (very fast) to 30 (very slow) ten-hour days.

Several other big decisions are worth pointing out. Here they are.

Fuel

If you haven't already, decide how you are going to fuel your maple syrup operation. The two fuels used in backyard sugaring are propane (or gas) and wood. Making maple syrup using propane or gas tends to be slow and expensive. Depending on your setup, you can burn as much as $20 of propane for every quart of syrup you make, and spend all weekend making each gallon! Making maple syrup using wood as your fuel is much less expensive and considerably faster.

Metal or Plastic

Whether as a matter of conscience, budget, or both, consider whether you would like to sugar with inexpensive, disposable (sometimes recyclable) plastic or durable, reusable (always recyclable) metal.

Spiles can be found in plastic, aluminum and stainless steel. Sap buckets come in plastic and aluminum, and there are special plastic bags for catching sap on the market, some of which come with metal holders. The thriftiest among us repurpose food safe containers like milk jugs. The buckets and spiles that came with your Maple Syrup Starter Kit are aluminum.

New or Used

You may have the opportunity to sugar with used buckets and spiles. Take note that most used buckets on the market are not considered to be food safe because they are made of galvanized steel, which may contain lead.

Used spiles are often made of cast iron. We are not aware of any safety hazards associated with cast iron taps, but it is worth noting that antique taps are 7/16 inches in size versus the modern 5/16 inches and require you to create a bigger wound in the tree. While both sizes are still widely used, more and more sugar makers of all varieties are turning to the 5/16 inch size to protect their sugar stands. The taps that came with your Maple Syrup Starter Kit are 7/16 inch.



Antique Tapping Equipment

Sourcing Tools and Equipment



Vermont Evaporator Maple Syrup Starter Kit

One of the questions I get the most is "where do I get sugaring supplies?"

Until recently, we sugared with a cobbled-together collection of old galvanized buckets and antique spiles from local hardware stores and flea markets. Hardly a satisfying response for the budding sugar maker, I'm afraid. Besides which, these sources, especially hardware stores, tend to have supplies only seasonally.

Depending on where you live, Craigslist may be a good choice for bigger items like sap storage tanks.

And some of us are lucky enough to live within driving dis-

tance of brick-and-mortar maple sugaring supply businesses. But, then again, many of us live in the boonies and just don't.

So what's a backyard sugar maker to do? As you know, we now carry many of the sugaring supplies you will need at www.vermontevaporator.com. Otherwise, there's always the internet! Here's what you are looking for:

Tool & Equipment Checklist:

- _ *drill with 7/16" or 5/16" bit*
- _ *hammer*
- _ *7/16" or 5/16" spiles*
- _ *lidded buckets or other closed containers*
- _ *sap transportation and storage containers*
- _ *cheesecloth*
- _ *maple syrup thermometer and/or hydrometer*
- _ *syrup filter and prefilters*
- _ *syrup storage containers*

Building or Buying an Evaporator

One needs only a heat source and a cooking vessel to make maple syrup from maple sap in the backyard. Our Sapling Evaporators are the only pieces of equipment on the market that are specially designed for backyard use, but plenty of people start making maple syrup using mostly or entirely things they already own or can get quickly and inexpensively. Here's what we know about the more popular DIY evaporator-making schemes. Please note that boiling on a pot on your kitchen stove or woodstove is not among them. While many of us have tried, it is nearly impossible to make syrup inside without making a devastating mess of your house. Until the finishing stage, best to keep it outside.

Pot Over an Open Wood Fire

This most basic of methods needs little explanation. Some backyard maple syrup makers simply make a camp fire and suspend a cooking vessel over it either by hanging the vessel or placing it on grates. They fill up the vessel with sap, adding more sap as it boils down. This method requires little planning, and is inexpensive. However, it is also extremely slow and typically results in smokey tasting syrup.

Flat Pan on a Propane Grill

Another popular method for making maple syrup in the backyard is to cook sap down in a flat pan on a propane or gas grill. The flat pan might be the roasting pan you use for your Thanksgiving turkey or a metal baking pan. This method requires little planning, but it is slow and uses a lot of fuel, making it expensive as well. If you decide to go this route, consider removing the flavor bars in your grill so that

your pan is exposed to the flame of the fire. Also consider the placement of your grill in relation to the wind. You will boil more efficiently if you keep your operation out of the wind.

Cinderblock or Brick with Wood or Propane

The next step up, so to speak, involves enclosing the heat source—whether it is a wood fire or one or more propane or gas burners (turkey fryer burners are a popular choice)—using cinderblock or brick. The enclosure of the heat source in a firebox like this forces the heat to pass through your boil. It is therefore more efficient than either of the methods just described. When constructing a brick or cinderblock firebox for propane or gas, you will need to ensure that the flame gets enough air to combust. If using wood, you will also have to give the smoke a place to go; often people rig up stovepipe for this purpose.

The DIY Barrel Evaporator

Some people make wood fireboxes out of barrels, old oil tanks and other enclosed metal items like filing cabinets. Barrels are by far the most popular choice.

Typically, DIY barrel evaporators are made from a 55 gallon barrel modified with a cast-iron, barrel stove kit, with holes in the top of the barrel for stainless steel hotel pans to fit and hold the sap. The size and tightness of the firebox helps to make this one of the more efficient DIY methods, and, of course, was the inspiration for our flagship Sapling Evaporator. When deciding between making a DIY barrel evaporator or purchasing a Sapling Evaporator, however, you may want to consider the following.

Efficiency

The barrel stove door on a DIY barrel evaporator does not have as much space for air intake as the Sapling's specially engineered door does. In addition, the exit pipe comes out of the top of the unit rather than the back of the unit leaving less surface area for boiling. Most importantly, the pan(s) are flat rather than baffled, which means that you must cook your sap down in batches instead of engaging in a continuous boil.

For these reasons, the Sapling can be as much as twice as efficient as a comparably-sized DIY barrel evaporator.

Durability

Our Saplings are coated with a durable, high-temperature powder coating. Each Sapling comes with instructions on care and maintenance. In addition, a care kit and a custom cover are available for purchase for customers looking to get the most wear out of their equipment.

Homemade barrel evaporators are lower quality and do not enjoy this level of durability.

Safety and the Environment

Saplings start as new, unlined, unpainted steel. They are assembled, media-blasted, powder-coated and outfitted with a stainless evaporation pan bearing lead-free welds and a lead-free pour-off valve.

Even when new barrels are used, homemade barrel evaporators are typically made with barrels that have been lined, and/or painted with coatings not suitable for high temperatures. Lighting a fire in such a barrel is an environmentally

suspect and potentially unsafe practice that we do not recommend.

Cleaning the paint and lining off of a barrel by safer mechanical means is difficult, dirty, and time-intensive work, but it is possible and important.

If you choose to go this route, consider applying a coat of high-temperature paint to the outside of your DIY barrel evaporator. After it dries, coat the inside and outside of the barrel with a thin layer of vegetable oil.

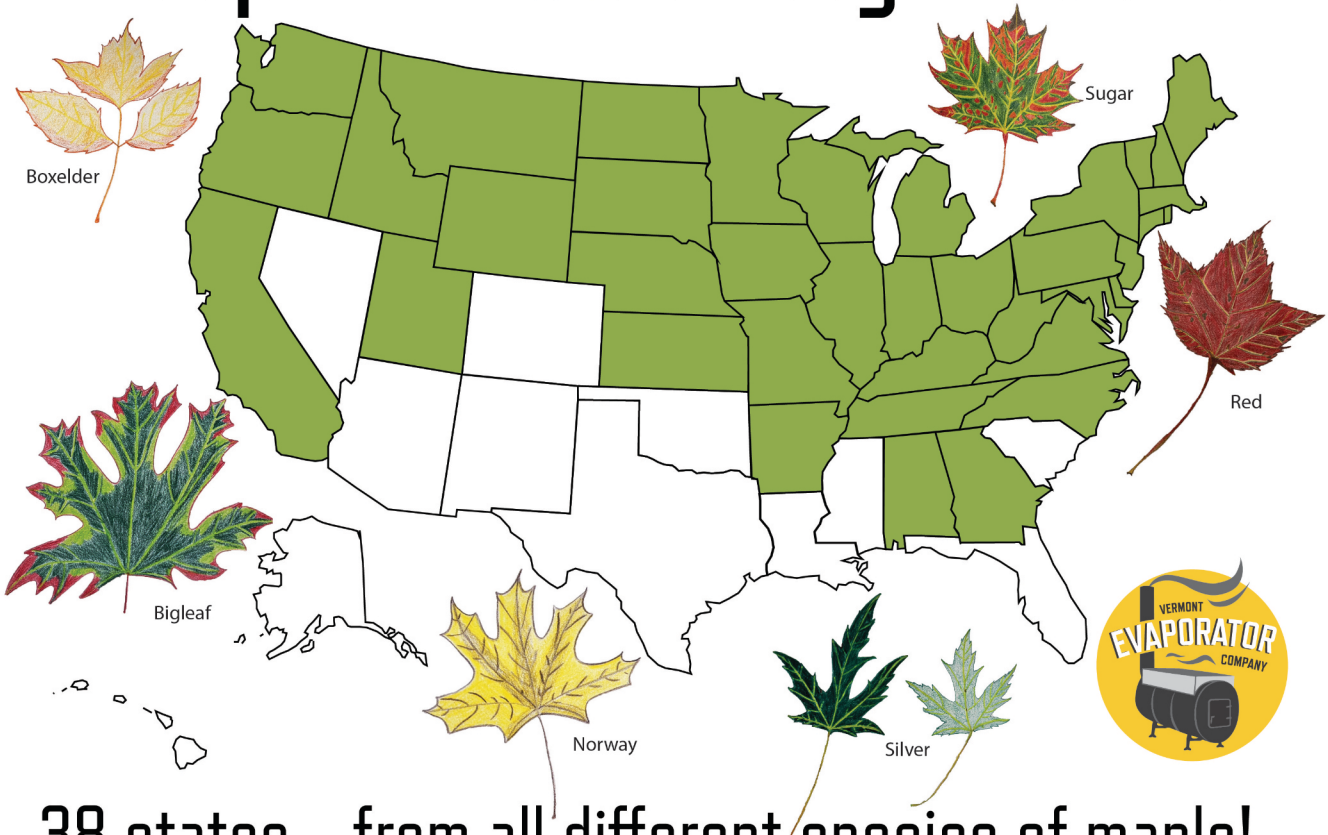
Consider Your Pan

No matter what firebox you are going to use, thinking about using a baffled pan instead of a flat pan is a worthwhile endeavor. All of the pans we carry are baffled. A baffled (or "continuous-flow") pan has chambers that allow you to add sap faster without "killing" your boil, and is therefore more efficient and faster. Here's how it works.

A continuous-flow pan boils efficiently because of a principal of physics called a density gradient. The density gradient results from changes in sugar concentration as water evaporates and sap turns to syrup.

There are density gradients no matter how you sugar, but they don't operate the same way in every pan. Envision a 20"x30" flat pan and think about the pathway from sap to syrup in that pan. You put the sap in. You start the fire. Water boils off. You add more sap. Now you have a density gradient: the denser liquid is at the bottom of the pan and the less-dense liquid is at the top of the pan. Every time you add sap, that density gradient forms, so you have to keep boiling and boiling until the

Maple Producing States

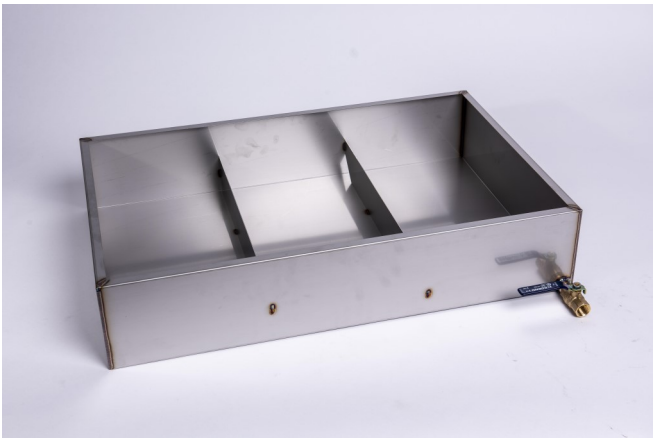


38 states... from all different species of maple!

entire pan is the same density, and then you draw it all off. In addition, every time you add sap, it takes time to bring the solution back to a boil again. That's the batch process.

The gradient works differently in a continuous-flow pan. Take that same 20"x30" pan and put two baffles in it. Now you have a pan that operates as if it is a 10"x60" pan, squashed over a 20"x30" firebox. You put the sap in, start the fire, and boil off water. Then, when you continuously and slowly add more sap *to one end of the pan only*, you rearrange the gradient into a flowing river, where the less dense liquid is at the put-in point and the more dense liquid is near the pour off, instead of a gradient designed like a stagnant pond with muck settling at the bottom.

The efficiency is in the continuous flow that the latter gradient arrangement allows for–because you can continuously and slowly add sap, there's no time-killing start and stop to your boil!



The Sapling Evaporator Pan: A Continuous Flow Pan with Two Baffles

Tapping Your Trees



When to Tap

You aren't going to be able to collect sap from a maple tree until the sap starts running. Sap runs when nighttime temperatures are freezing and daytime temperatures are not. So when you tap is going to depend entirely on where you live–both in terms of geography and elevation–what the weather is doing that year, and thus when it is both cold enough and warm enough to create sap flow.

As you know, the climate is warming and weather patterns are changing, so adhering to old customs are becoming less and less useful. For example, in central Vermont, Town Meeting Day—the first Tuesday in March—is when hill farmers would traditionally tap. For the last few decades, however, March has some-

times proved too late for the region. These days, us hobby makers are likely to get ourselves out in the sugar woods by mid-February.

People in North Carolina, Kentucky, Ohio, Virginia and West Virginia may start tapping, collecting and even boiling during the week between Christmas and New Years. By the end of January, the rest of the Southern Midwest and Mid-Atlantic–Missouri, Illinois, Indiana, Maryland, Delaware, New Jersey and Pennsylvania–will likely have joined them. Southern New England and thereabouts–Massachusetts, Rhode Island, Southern New York and Connecticut–will follow. Like Vermont, in the Northern Midwest and in New England–Minnesota, Wisconsin, Northern New York, Maine, and New Hampshire, people typically don't tap until at least mid-February or even March. And at certain elevations in upstate New York and in Canada, people may wait until April.

The easiest way to get acclimated, if you are just starting out, is to pay attention to what other sugar makers are doing in your area.

How to Tap

To Tap, You Need:

_ drill with 7/16" or 5/16" bit
_ hammer
_ 7/16" or 5/16" spiles
_ lidded buckets or other closed containers

Collect your tools and equipment and proceed to your first tree. Choose a height that is both convenient for the driller and collector. Choose a spot that is easy to drill at that moment, but also think about the current depth of the snow: is the collector going to have to reach over his or her head to collect the bucket when the snow melts?

Having settled on a height, inspect your tree. For best results, you should choose a place on the tree that is either below a big branch or above a big root, and definitely not near a knot or wound in the tree. Cardinal direction doesn't matter too much–every year you should tap at least 6″ away from the prior year's tap anyway–but a southern tap *will* flow before a northern one, so do think about how you'd like to time your season this year.



Drilling the Tap Hole

When you've chosen your spot, drill a hole of about one and one-half inch deep at a slight, upward angle and look for nice, light, creamy wood chips and sawdust coming out. If what you see is dark or dead, find another

spot on the tree and try again.



Setting the Spile



Hanging the Bucket

When you have your hole, set your spile in the hole by gently tapping it with your hammer. Hang your bucket, and put on your lid. Move on to the rest of your sugar-bush. Now it's time to wait for the sap to run!



Affixing the Lid

Collecting and Storing Sap



Sap in Collection Buckets

The weather is just right–freezing nights and thawing days–and you've been checking your buckets dutifully. One day, your small sugar stand rings with the plink-plank-plunk of sap dripping from your maple trees into your buckets. It's time to collect and store your sap in preparation for your first boil! Before you get started, here are some things we've learned in our years of DIY maple syrup making.

First of all, do not be put off by sugar makers that insist that sap must be boiled off immediately upon coming out of the tree. In big, commercial operations, this is, in fact, the practice, and may be perfectly true in that context. However, having had thousands of conversations with DIY maple syrup makers, we can say with great confidence that this is not common practice among us backyard, homestead, hobby farm people. Instead, we collect sap daily, and store it in food-safe containers in a naturally occurring refrigerator.

What's a "naturally occurring refrigerator," you ask? In our climate, here in central Vermont, snow banks on the north side of a building work great. In the southern part of sugar country where snow cover is not guaranteed, people use shallow streams to keep their sap storage containers cool. Cold spaces in garages and barns can work well in any climate; think root cellar. Our experience has been that sap can be saved for a week to ten days by such methods with absolutely no adverse effects at all.

Having said that, daily collection is still a good idea! In order to keep your sap cool and fresh, you should collect sap every day and get it into refrigerated storage. This will ensure that it's not sitting at elevated temperatures (for example, in a metal bucket in the sun) for extended periods of time. So pick a time that works for you, and make it a part of your daily schedule to check and empty your buckets.

If you are a morning collector, you may find some ice in your buckets; feel free to chuck it! Do not fear, this ice has little to no sugar content, so you will actually give yourself a head-start by ridding yourself of it tree-side. In fact, Native Americans–the original backyard maple sugar makers–used this method to speed up the process.



Sap in a Storage Barrel

You may also find twigs and bugs in your sap; use cheesecloth or the equivalent to filter your sap at the point of collection. And don't be grossed out. You are going to boil this sap for a very long time. It, and you, will lose the memory of those bugs by the time that syrup hits your pancakes!

Do not hesitate to mix saps from different maple trees. This is, in fact, how it is done! Many of us DIY maple syrup makers tap red maples in addition to sugar maples. And any maple can be tapped to make syrup. Since it all tastes the same, there's no reason to separate saps.

There are several storage container options available; the important thing is to choose something that has been manufactured for food storage. Food-safe, polyethylene drums are widely available. There are also food-safe liquid totes out there that are often put in use for sap storage. These are large capacity; purchasing one of these is likely to feel like overkill, but also give you room to grow if you plan to expand your operation.

For smaller hobbies, several two or five gallon plastic, food-safe containers may do the trick. If you have two gallons of storage per tap, that should be plenty.

Collecting & Storing Sap Requires:

_ food safe collection buckets
_ cheesecloth
_ food safe storage container(s) (2 gal./tap)
_ a naturally refrigerated location
_ daily collection, weekly boiling

Boiling Sap



Boiling Down Sap on a Sapling Evaporator

You've tapped your maple trees. You have been collecting and storing sap. The weekend approaches. It's time to boil down some maple syrup! Here's how.

Making Maple Syrup is Simple

Making maple syrup is a simple process that involves removing most of the water from maple sap—a weak sugar solution with a unique mix of minerals—through evaporation. While maple syrup sold commercially is of a very precise sugar concentration, those of us who make syrup for subsist-

ence and gifting don't generally hold ourselves to the same level of precision. Like the proverbial horseshoes, with DIY maple, close often really does count.

Evaporation Requires Heat and a Vessel

As already stated, all you need to reduce sap to syrup is a cooking vessel and a heat source. It takes 40 gallons of sap from a sugar maple to make a gallon of maple syrup, and can take more than 60 gallons of sap from a red, silver or other maple to make a gallon of syrup, so it's best to bring some patience as well.



Evaporation Requires Heat and a Vessel

From Sap to Finished Syrup

To start, situate your pan over your heat source, put some sap in it, light your fire, and bring your sap to a boil. Boil some more. Next, boil. Then, keep boiling. Finally, boil some more. Get the idea?

You will notice the sap level drop, and the sap itself becoming darker in color, thicker, and sweeter to the taste. Depending on the volume of sap you have collected relative to the capacity of the vessel you have chosen, you may put all your sap in the vessel at once and boil it all down to syrup in one go, you may put some of your sap in the vessel and add more sap to your boil throughout the day, or you may run two or more vessels at once, boiling from raw sap to sweetened sap in one or more vessels, and from sweetened sap to syrup in another. If you have a baffled sugaring pan, you will be adding more sap to your pan continuously as the sweetened sap thickens.

Whatever method you choose, keep boiling until what you have acts, tastes and looks like syrup. You can be as precise as you wish: undercooked syrup tastes just fine, but does not have as long of a shelf life; overcooked syrup is sugar, which tastes even better but, if achieved by accident, can lead to burnt pans and large messes, heartbreak and gnashing of teeth.

For an analog test, drizzle a bit of your boil on a cold plate and see if it acts like syrup, or dunk a spatula in your syrup and see if it comes off in a sheet (syrup) or drops (not yet). For more precision, take a temperature reading: syrup boils at about seven degrees above water, so a boiling solution that measures about 219 degrees is syrup. You can check to see if you have achieved professional precision by taking a Brix reading with a syrup hydrometer.

A note about wood: many who make maple syrup using wood heat choose to draw off a bit early into another pot or pan and finish on, for example, a propane burner outside, or on the kitchen stove inside. This is because those methods allow us to better control the heat (wood heat is hard to regulate) and better monitor the temperature (high quality maple thermometers like the one that came with your Maple Syrup Starter Kit need several inches of fluid to give a reliable reading) to ensure that we do not overcook. Once you are at the finishing stage, it's fine to bring your boil inside; at that point, you'll make no more mess of your house, generally, than you would by making pasta.

Boiling, Filtering & Storing Syrup Require:

_ heat source and a vessel
_ cheesecloth
_ maple syrup thermometer
_ maple syrup filter
_ two maple syrup pre-filters
_ clean jars/bottles with clean lids/caps

Filtering & Storing Syrup



Sweetened Sap on the Kitchen Stove

Not everyone filters their homemade maple syrup. If you are making for home consumption and don't mind finding sugar sand (concentrated minerals) at the bottom of your jars, you can skip this step. If you intend to gift syrup in pretty bottles, are a perfectionist, or otherwise inclined to filter, having the right supplies really helps: the syrup filter and prefilters that came in your Maple Syrup Starter Kit are the right supplies. Take it from us: this will be a giant improvement on using coffee filters (slower than slow), cheesecloth (lets everything

through), or something you've rigged up using dish towels and your applesauce maker (mess, trauma, disaster). Layer two prefilters inside the filter and place in an appropriately sized, food-safe receptacle. Pour your syrup through the layers, taking the inner prefilter out when it clogs. (Don't throw it away; it can be rinsed and reused.).

Have your jars clean and at the ready. Make sure that your syrup is at least 180 degrees going into the jar. If it isn't, heat it up to between 180 and 200 before canning. Once the jar or bottle is full (with 1/4 inch head room) and the lid secure, lay it on its side for at least 30 seconds. Return upright, let cool, and store for up to two years on the shelf. Resist the temptation to can your syrup by boiling in a hot water bath; it is unnecessary and you may end up with intractable rock candy at the bottom of your jar.



Maple Syrup Stored in Ball Jars

Cleaning and Storing Equipment



Taps Drying on a Dishtowel

After you are finished sugaring for the year it is important to remove your taps from your trees so that the trees can heal between sugaring seasons. Then it is time to clean and store your equipment.

You can easily clean your taps for storage by boiling them in water and setting them on a dishtowel to dry. Sap buckets can simply be rinsed and stacked to dry. Your sugaring pan is likely to have cook marks ranging from brown to black. This is burned-on sugar. It can be removed by filling the ves-

sel with a weak baking soda water solution (3 tablespoons of soda per 5 gallons of water), boiling the solution in the pan for 30 minutes and leaving it to cool for several hours or overnight. The cook marks should wipe or flake off easily with a soft rag. Do not use abrasives, detergents or harsh chemicals to clean your taps, buckets or sugaring pan.

Rinse, ring and hang your filters to dry. For tenacious gunk, you may choose to boil your filters for 15 minutes and let cool before wringing and drying. Do not use anything other than water to clean your filters, including detergents.



Buckets Stacked to Dry

Caring for Your Sugar Woods

The garden is in and you've become the master of your lawn. Maybe you've even stacked all of next winter's firewood. What a perfect time to augment your maple sugaring hobby by actively caring for your sugar woods!

What does that mean? Well, every ecosystem requires balance, including the ecosystem that supports your maple trees. Due to contemporary human activity, balance is a bit harder to come by now than it used to be. But there *are* things today's humans can do to soften our imprint on the world, and caring for our woods is one of them.

According to at least one expert, there are three main things each of us can do to help our sugar woods remain healthy: (1) identify and remove invasive plant species, (2) ensure an ideal suite of tree species, and (3) protect riparian buffers and other critter habitat by leaving waterfronts wooded and woods "messy." Let's take those three in turn.

Removing Invasive Plants From Your Sugar Woods

An invasive plant is a non-native plant that does damage to its adopted ecosystem by thriving there. The three invasive plants that do the most damage in sugar country are buckthorn, honeysuckle and barberry. Removing them by cutting, pulling or burning them will go a long way in protecting the forest habitat. While big maple producers may have too much land to eradicate these species, someone with a ten-acre plot, for example, can totally handle the task.



Buckthorn



Honeysuckle



Barberry

The first step to removal, of course, is identification. The Nature Conservancy has prepared handy information sheets on buckthorn, honeysuckle, and barberry that you can use to distinguish these harmful plants from native flora. Whether you make color copies of these sheets or bring a device into the woods for reference, it's also a great idea to sketch a map of your plot and/or bring some marking tape with you to mark the location of invasives for future reference.

After you've identified your invasives, it's time for removal. It is best to remove invasive plants from the ground in their entirety – roots and all – as long as the infestation covers a modest surface area. (Root removal of infestations that cover a large surface area can leave bare ground ripe for other invasives to take root. Such removal on steep slopes can lead to soil erosion.) For mature plants, however, cutting and covering with black plastic or a double layer of burlap is a respectable, next-best method. When pulling, it is important to get the entire root system as these plants propagate from the roots. Complete covering of all above-ground parts of the plant is necessary for the same reason. Either way, pause to pat yourself on the back for punctuality. Early detection and removal is key to controlling invasives.

What to do with the invasives once you've removed them? First of all, think twice about bringing them off site–in Vermont, for example, it is actually illegal to do so unless you really know what you are doing. Also note that composting invasives can result in more infestations if not done according to certain best practices. Bagging your invasives and bringing them to the dump is an option of last resort. But destroying these woody weeds in a bonfire is probably fine. You also have the option of simply hanging the invasive on a tree by its roots to dry and die.

Ensuring an Ideal Suite of Tree Species

Every kind of woods has an ideal suite of tree species that helps the ecosystem thrive. When you are a forester, you sweat the details. But homeowners can make an impact simply by focusing on variability.

To begin, walk in your woods and catalog all of the species of trees you find there–including the understory (young trees). If what you find there is reasonably diverse–say around eight species–that's great. You can care for your woods by just not cutting all or most of any single species.

If what you find is not monocultural (sugar maple only) but is non-diverse (only a few species of trees) consider planting or clearing around an existing oak or two. Oaks are great companion plants in northern hardwood forest; they are great habitat for moths, butterflies and song birds and provide a food source for bear, turkey and deer. They are also projected to do well in a warming climate.

If you do have a sugar maple monoculture, planting hemlocks and red maples can help diminish the virulence of tent caterpillar invasions. Just take a couple of hours to look around, find out how diverse your woods are, and act, or not, accordingly.

Protecting Riparian Buffers and Other Habitats

While the first two steps in caring for your sugar woods are active, the last is passive. You can protect or create the potential for diversity for other species, including fauna, by leaving standing dead trees (called "snags"), leaving dead logs on the ground, and, where bodies of water exist, ensuring that riparian buffers (forested area

providing shade) are in place. Leaving waterfronts wooded and woods "messy" is enough. If you have an exceedingly neat woods already, don't be afraid to leave a few brush piles in the forest to encourage critters to come, stay and contribute to the balance!



A Healthy Sugar Woods

Congratulations! You've come to the close of your first year of backyard sugaring. For more information about maple syrup visit www.vermontevaporator.com/blog. Until then, have fun and keep in touch, and, as always, happy sugaring!

Glossary

As you've started making your own maple syrup you've run into some terms that are unfamiliar to you. Enter the sugar maker's glossary!

arch - (noun) a structure that holds evaporator pans above a cookfire; the term probably originated before evaporators were developed, when people commonly boiled in pans or kettles over an open flame, but is now used synonymously with "evaporator"

baffled pan - (noun) an evaporator pan with dividers that channel boiling sap around the pan, allowing for a continuous boil

boil - (verb) to cause maple sap to reach the temperature at which it bubbles and the water contained therein turns to vapor; (noun) the activity of turning maple sap into maple syrup, or an event featuring the turning of maple sap into maple syrup

finishing pan - (noun) a pan used to turn highly concentrated maple sap into maple syrup

fire box - (noun) the part of an evaporator that encloses the cookfire and supports the evaporator pan(s); the term is sometimes used synonymously with "arch"

flat pan - (noun) an evaporator pan that lacks baffles or flues; when used in conjunction with other evaporator pans, also known as "syrup pan" or "front pan"

flue pan - (noun) an evaporator pan with channels on the bottom designed to increase the surface area maple sap is exposed to the heat of the cookfire; when used in conjunction with other evaporator pans, also known as a "sap pan" or "back pan"

grade - (verb) the act of judging finished maple syrup by the quality standards of color, clarity, density and flavor; (noun) the color class of a particular volume of maple syrup: golden, amber, dark or very dark

hydrometer - (noun) an instrument used to measure the sugar content of maple sap ("sap hydrometer") or maple syrup ("syrup hydrometer") in units known as "brix"

nitre - (noun) a term used to describe water soluble minerals in maple sap that, as water is removed through evaporation, join together and adhere to each other in crystals (these crystals are also known as "sugar sand"); the term is also used to describe such minerals that, alone or in conjunction with sugar crystals, burns on to an evaporator pan during a "boil"

rig - (noun) slang for "evaporator," also used synonymously with "arch," and commonly referring to a self-made system of sap evaporation

run - (noun) the time at which sap flows in a maple tree; (verb) the movement of maple sap during early spring, particularly the movement that causes it to exit the tree through a "tap" or “spile”

spile - a plastic or metal spout that channels the sap from the maple tree into a line or bucket or other sap-catching container; also known as a “tap”

sugar bush - (noun) a group of maple trees that are mature

and healthy enough to be tapped, also known as "sugar stand"

sugar house - (noun) a structure that houses equipment used to make maple syrup from maple sap, also known as "sugar shack" in slang

sugar maker - (noun) any person who makes maple syrup from maple sap; originating from a time when maple sap was commonly boiled beyond syrup and down to sugar for easy storage before metal or glass containers were available or accessible

sugar sand - (noun) a term used to describe water soluble minerals in maple sap that, as water is removed through evaporation, join together and adhere to each other in crystals; such minerals are removed from syrup by filtering

sugar stand - (noun) a group of maple trees that are mature and healthy enough to be tapped, also known as "sugar bush"

tap - (noun) the wound in a tree that allows maple sap to exit the tree; also known as “spile;” (verb) to make such a wound in a maple tree

warming pan - (noun) a pan used to increase the temperature of maple sap before it is introduced to the "boil"


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