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The History of Maple Syrup

So, When Did it All Start?

No one is really sure just how long people have been practicing the art and science of making this wonderful product from the sap of a tree. We do know that Native Americans were already using maple sap to flavor their food long before European settlers discovered its sweetness.

Indian Legend and Lore

Native Americans have many wonderful stories about how they began making maple syrup. The first is the legend of Glooskap. Many, many, many years ago the Creator had made life much easier for man. In fact, in those days the maple tree was filed with syrup and all man had to do was cut a hole in the maple tree and the syrup dripped out. One day the young prince Glooskap (known by other names in other tribes) came upon a village of his people that was strangely silent. There were no dogs barking, no children playing, no women minding the cook fires, and no men getting ready to go hunting! Glooskap looked and looked and finally found everyone in the nearby maple grove. They were all lying at the bases of the trees and letting the sweet syrup drip into their mouths. Even the dogs were enjoying the syrup. “Get up, you people,” Glooskap called. “There is work to be done!” But no-one moved.

Now Glooskap had special powers, and he used these powers to make a large bark container. He flew to the lake, filled the container with water and flew back to the maple grove. When he poured the water over the trees it diluted the syrup so it was no longer sweet. ”Now, get up you people! Because you have been so lazy the trees no longer hold syrup, but only sap. Now you will have to work for your syrup by boiling the sap. What’s more, the sap will soon run dry. You will only be able to make syrup in the early spring of the year!”

Another legend relates to the Earth Mother, Kokomis, who made the first maple syrup. Now Kokomis made a hole in a tree, and maple syrup poured out. However, her grandson, Manabush, was worried that if the sweet gift of the maple tree was so easily obtained, the Indians might become shiftless and lazy. So he showered the top of the sugar maple with water, thus diluting the maple syrup into sap.

The Chippewas and Ottawas of Michigan tell a similar story of the god NenawBozhoo, who cast a spell on the sugar maple tree many moons ago, turning the near pure syrup into what is now called sap. He did this because he loved his people and feared they would become indolent and destroy themselves if nature’s gifts were given too freely. This legend is unique in that, in various forms, it can be found almost universally throughout the Eastern Woodland Indian tribes. This is unusual for cultures that did not have a written history.

Perhaps a more believable story is that of the Indian woman named Moqua. The story was recounted in the April 1896 issue of The Atlantic Monthly by Vermonter Rowland E. Robinson. The story goes that Moqua was cooking a prime cut of moose for her husband, the hunter Woksis. However, Moqua became preoccupied with her quill-work and let the pot boil dry. Realizing she did not have time to melt some snow she used some maple sap she had been saving for a beverage. Woksis was so impressed with the meal he broke the pot so he could lick the last of the “goo” from the pot shards.

Yet another legend states that a chief removed his tomahawk from the trunk of a sugar maple tree, where he had thrown it the night before. As the sun got higher, the sap began to drip from the gash in the tree. The Chief's wife tasted it and discovered that it didn't taste bad, so she used it to cook the meat (though another version says that the pot was left under a broken sugar maple branch and the sap dripped into it). Later when the meat was cooked, the sap boiled down to a syrup. The irresistibly sweet scent and taste of the maple meat so delighted the Chief that he named it Sinzibuckwud—a word meaning “drawn from trees.” This became the word used most often by Native Americans when referring to maple syrup.

Early Indian Methods

Native Americans gradually reduced the sap to syrup by repeatedly freezing it, discarding the ice, and starting again. Some made birch bark containers that held about 20 to 30 pounds of maple sugar for storage. The Ojibways of the Great Lakes, the Wyandots of the Detroit River, and the Indians at Pidgeon Lake, were similar in how they processed the maple sap. As soon as the sap began to rise, the women and their families migrated in family groups to the maple groves, or “sugar bushes,” where they erected a camp and lived in wigwams made of bark. They prepared troughs, collected the sap, and brought it to the fire, while the most experienced women regulated the heat. Sometimes the sap was made to boil by placing hot stones in the mixture. Freshly heated stones were constantly added, while the cooler ones were fished out and reheated. Usually, each woman had her own sugar shack.

Native Americans had various names for certain maple items. the Cree called the sugar maple Sisibaskwatattik (tree), the Ojubway called maple sugar Ninautik (our own tree), and other tribes called the maple, Michton. Early Native Americans seldom used salt (they preferred sugar) and used maple on meat and fish. Some tribes celebrated the return of spring with a “maple moon” festival which is know today as “sugar-off time.”

Birth of an Industry

The early settlers observed the Native Americans and imitated their methods. They boiled 40 gallons of sap over an open fire until it became one gallon of syrup. This was a time consuming and labor intensive operation. Things didn’t change much for the first two hundred years of recorded maple making. Then, during the Civil War, came a neat little invention called the tin can. The tin can was made of sheet metal. It didn’t take syrup makers long to realize that a large flat sheet metal pan was more efficient for boiling than a heavy rounded iron kettle which let much of the heat slide past.

Virtually all of the syrup makers were self sufficient dairy farmers who made syrup and sugar during the off season of the farm for their own use and for extra income. These farmers were and continue to be folks who look at a process and say to themselves, “There has to be a faster, more efficient, easier way to do this.” In about 1864 a Canadian borrowed some design ideas from sorghum evaporators (You don’t know what sorghum is? It is what us Northerners call molasses.) and put a series of baffles in the flat pans to channel the boiling sap. The ideas continued to flow. In 1872 a Vermonter developed an evaporator with two pans and a metal arch or firebox which greatly decreased boiling time. Seventeen years later, in 1889, another Canadian bent the tin that formed the bottom of a pan into a series of flues which increased the heated surface area of the pan and again decreased boiling time.

For the most part technology stayed at this point for almost another century. By the 1960’s, however, it was no longer a self sufficient enterprise with large families as farm hands. Because syrup making was so labor intensive a farmer could no longer afford to hire the large crew it would take to gather all the buckets and haul the sap to the evaporator house. Finally when the energy crunch of the 1970’s occurred, syrup makers responded with another surge of technological breakthroughs. Tubing systems, which had been around experimentally since the early part of the century, were perfected, and the sap came directly from the tree to the evaporator house. Vacuum pumps were added to the tubing systems. Pre-heaters were developed to “recycle” heat lost in the steam. Reverse-osmosis filters were developed to take a portion of water out of the sap before it was boiled. Several producers even obtained surplus desalinization machines from the U.S. Navy and used them to take a portion of water out of the sap prior to boiling.

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Description of A Maple Tree

Sugar and Black Maple

Sugar and black maple are very similar species and unquestionably the most preferred species for producing maple products, primarily because of their high sugar content. Sugar maple occurs naturally throughout most of the northeastern United States and southeastern Canada Black maple, on the other hand, occupies a much smaller natural range Distinguishing between them may be more of an academic exercise than one useful in sugar bush management because (1) they are essentially identical in quality as sugar trees, and (2) they often hybridize producing trees with a range of characteristics, making it difficult to clearly distinguish between them.

Identifying a tree as a sugar or black maple is easily done from the leaves by observing 5-lobed leaves, the paired opposite attachment of the leaves along the stem and the lack of teeth along the leaf margin; from the bark of older trees by observing the long plates that remain attached on one side; from the twigs by observing the opposite arrangement of buds and the relatively long, pointed, brownish terminal bud; and from the seed by observing its horseshoe shape and size. Distinguishing between sugar and black maple is best done by comparing the leaf structure (particularly the number of lobes, droopiness and presence or absence of stipules along base of petiole) and by the degree of bumpiness of the twigs.

Sugar and black maples are found on a variety of soils and site conditions, but neither tolerates excessively wet or dry sites, and both grow best on moist, deep, well-drained soils. Black maple is more likely to be found along moist river bottoms. Both species can be found growing in pure stands, with each other, or with a wide variety of other hardwood species including American beech, American basswood, yellow birch, black cherry, northern red oak, yellow poplar and black walnut. Both species have been planted extensively as roadside trees which are often tapped as part of a sugaring operation. Plantations of sugar maple have also been established with the intent of developing efficient, productive sugar bushes. Both species are relatively long lived, capable of living well beyond 200 years, with trunk diameters greater than 30 inches and heights greater than 100 feet.

Sugar and black maple both grow in the shade of other trees (they are shade tolerant), and trees of many different ages (sizes) are often found in a forest. Both species are also found in stands composed of trees that are essentially all the same age (size). Healthy sugar and black maple trees growing in overstocked uneven-aged or even-aged stands can be expected to achieve tapable size in 40 to 60 years, depending on overall site quality. Thinning or release cutting dramatically reduces this age-to-tapable-size.

Sugar and black maple are particularly attractive as sugar trees because of their high sap sugar content and the late date at which they begin growth in the spring. Sugar and black maple have the highest sap sugar content of any of the native maples. While the exact sap sugar content of a tree will vary depending on many factors including genetics, site and weather, sugar and black maples generally average between 2.0 and 2.5 percent sap sugar content. It is not unusual to find many trees in a sugar bush well in excess of 3 percent, and occasionally higher. Genetic research on sugar maple suggests that the sap sugar content of planted seedlings can be increased by controlled breeding. Other things being equal, higher sap sugar content translates to lower costs of production and greater profits.

Black and sugar maples begin growth later in the spring than red or silver maple. As maples begin their growth, chemical changes occur in the sap which make it unsuitable for syrup production. The term "buddy sap" is often applied to late season sap which produces syrup with a very disagreeable flavor and odor. Because sugar and black maple resume growth later than red or silver maple, sap may be collected later in the spring.

Identifying Characteristics of A Sugar Maple.

Species - Sugar Maple

Leaf - 3-5 inches wide; 5lobed (rarely 3-lobed); bright green upper surface and a paler green lower surface; leaf margin without fine teeth

Bark - Young trees up to 4-8 inches with smooth gray bark. Older trees developing furrow and ultimately long, irregular, thick vertical plates that appear to peal from the trunk in a vertical direction

Twig - A somewhat shiny, brownish, slender, relatively smooth twig with 1/4-3/8 inch long sharply pointed terminal bud

Fruit - Horseshoe-shaped double-winged fruit with parallel or slightly divergent wings. Winged seed approximately 1" long. Fruits mature in fall.

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Information on The Maple Leaf

How and Why Maple Leaves Change Color

As the earth makes its 365-day journey around the sun, some parts of the planet will get fewer hours of sunlight at certain times of the year. In those regions, the days become shorter and the nights grow longer. The temperature slowly drops. Autumn comes and then Winter soon follows.

Maple Trees respond to the decreasing amount of sunlight by producing less and less chlorophyll. Eventually, the tree stops producing chlorophyll. When this happens the carotenoid already in the maple leaves and the anthocyanins created that autumn, can finally show their colors. With the green mask of chlorophyll gone, the leaves become a bright rainbow of glowing yellows, deep reds, sparkling oranges and warm browns.

What Do The Colors Of The Maple Leaf Mean?

Do you know where maple leaf colors come from?
Maple Leaf colors come from pigments. Pigments are natural substances produced by leaf cells. There are three pigments that color a leaf.

Chlorophyll (green)
Carotenoid (yellow, orange and brown)
Anthocyanins (red)

Chlorophyll is the most important of the three. Without the chlorophyll in maple leaves, trees wouldn't be able to use sunlight to produce food.
Carotenoid create bright yellows and oranges in familiar fruits and vegetables. Corn, carrots and bananas are just a few of the many plants colored by carotenoid.
Anthocyanins add the color red to plants, including cranberries, red apples, cherries, strawberries and others.

Chlorophyll and carotenoid are in a maple leaf cells all the time during the growing season. But, the chlorophyll covers the carotenoid - which is why summer maple leaves are green and not yellow and orange. Most anthocyanins are produced only in autumn, and only under certain conditions. Not all maple trees can make anthocyanins.

Do You Know A Maple Tree By The Color Of Leaves?

A sugar maple has orange - red leaves in the fall. Black maple has the glowing yellow leaves and the red maple have the bright scarlet leaves in the fall.

Is Weather The Reason Maple Leaves Change Color?

Sometimes the red fall colors seem brighter and more spectacular than in other years. The temperature and cloud cover can make a big difference in a tree's red colors from year to year. When a number of warm, sunny autumn days and cool but not freezing nights come one after another, it's going to be a good year for reds! In the daytime, the maple leaves can produce alot of sugar, but the cool night temperatures prevent the sugar sap from flowing through the maple leaf veins and down into the branches and trunk. The extra sugar sap and sunlight increase the production of the anthocyanin pigments in the maple leaves. When the chlorophyll is finally gone, theses maple leaves will turn bright, brilliant shades of red, purple and crimson. The yellow, gold and orange colors created by carotenoid remain fairly constant from year to year. That is because carotinoid are always present in maple leaves, and the amount does not change in response to the weather. The amount of rain in a year also affects autumn maple leaf colors. A sever drought can delay the arrival of fall colors by a few weeks. A warm wet period during fall will lower the intensity, or the brightness of autumn colors. A severe frost will kill the maple leaves, turning them brown and causing them to drop early. The best autumn colors come when there's been: A warm wet spring. A summer that is not too hot or dry. A fall with plenty of warm sunny days and cool nights.

Do You Know Why Leaves Fall From The Tree?

A Maple tree's roots, branches and twigs can take the freezing temperatures, but most leaves are not so tough. On a broadleaf tree, such as a maple, the tender thin leaves, made up of cells filled with water sap, will freeze in the winter. Any plant tissue unable to live through the winter must be sealed off and shed to ensure the maple tree's survival.

As sunlight decreases in autumn, the veins that carry sap into and out of a leaf gradually close. A layer of cells, called the separation layer, forms at the base of the maple leaf stem. When this layer is complete, the maple leaf is separated from the tissue that connected it to the branch, and it then falls off and onto the ground.

Tapping A Maple Tree

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How To Tap A Maple Tree

A tree should be at least 10 inches in diameter, measured at 4-1/2 feet above the ground, before tapping. Trees between 10 and 20 inches in diameter should have no more than one tap per tree. A second tap may be added to trees between 20 and 25 inches in diameter. Trees over 25 inches in diameter can sustain three taps. No tree should ever have more than three taps. The shape and size of the crown are also important. Trees with large crowns extending down towards the ground are usually the best sap producers.

Step 1. Drill the hole using a drill bit with a diameter of 7/16 inch, at a convenient height and two inches deep if you are using standard-size spouts. If you are using small taps (5/16 inch), or the health spout (19/64 inch), use the corresponding drill bit size and drill the taphole only 1 1/2 inches deep. Look for unblemished bark. Do not bore closer than two feet directly over or under a former tap hole or closer than six inches from the side an old taphole. Drill the tap hole with a slight upward angle so the sap flows out readily. Use a sharp drill bit to minimize rough wood in the tap hole, which can reduce sap yield and cause sap quality problems.

Step 2. Tap the spout in so that it is tight and cannot be pulled out by hand. But don't drive it in so hard that you split the tree. Tap on warm days when the temperature is above freezing to minimize the risk of splitting the tree.

Step 3. Hang your bucket, sap sack or container on the hook of the spout if it is a purchased one; or, if you have made your own, fashion a length of wire to serve as a hanger. Be sure to cover the bucket to keep out rain, snow and foreign material. If using a sap sack a cover is not neccesary. Most all tapping supplies can be purchased at your local maple syrup equipment supplier. To help save money ask when purchasing supplies, to see if cleaned used supplies are available.

The yield of sap varies greatly with the method of tapping, the size of the tree, and seasonal differences. Guidelines for number of taps per tree

Diameter in inches	Circumference in inches	Number of taps
10–20	31–63	1
20–25	64–79	2
>25	>79	3

Maple Sap Flow Through A Maple Tree

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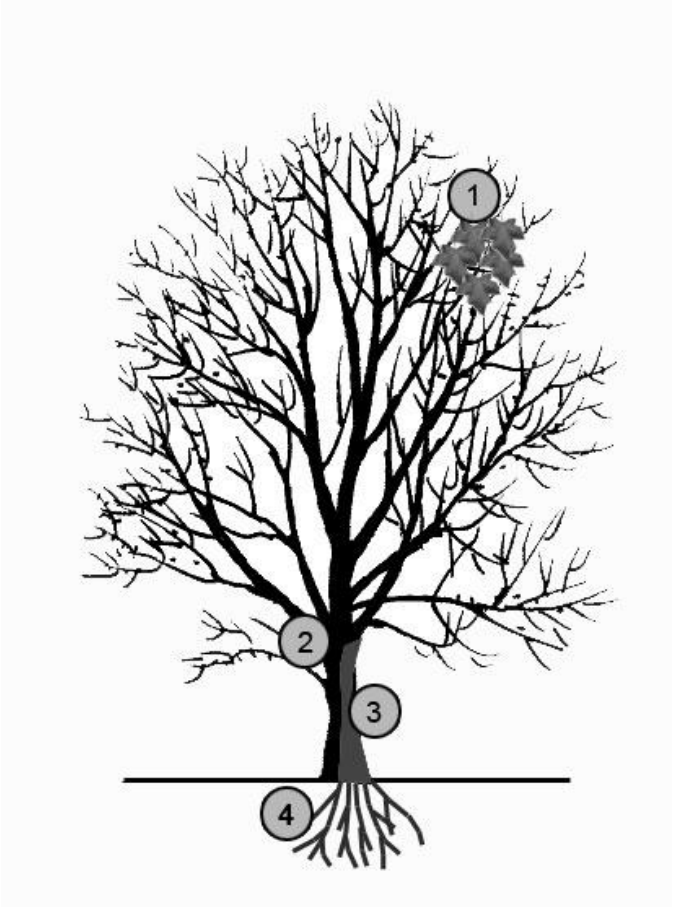
This incredible pumping feat starts deep down in the earth where millions of microscopic root hairs absorb water and dissolved minerals. Tube-like cells in the trunk form continuous pipes, each containing an unbroken column of water. High in the crown of the tree, the leaves take in water and carbon dioxide and produce oxygen and sucrose. As water is consumed, a shortage is created in the leaves that causes the columns to move upward and literally pull more water from the soil. No man-made vacuum pump can pull water beyond 32 feet. Yet the sugar maple draws over 75 feet, and some trees pull water 150feet or higher. The maple's remarkable pump evolved over millions of years. We can not equal nature in patience or performance



1. Leaves make food for the tree. Branches stretch out from the trunk to let sunlight reach the leaves. Using the energy from sunlight, green leaves combine carbon dioxide with water from the roots to make a nourishing sugary sap. A leaf "breathes" through many thousands of tiny holes on its surface. It takes in a gas called carbon dioxide from the air and gives off oxygen. When you breathe, you take in the oxygen given off by trees and other plants, and breathe out carbon dioxide.

2. Bark is the skin of the tree. It protects the inside of the tree from animals and bad weather. Some trees have bark that stretches easily as they grow, so the bark stays smooth. But most trees have bark that cracks and gets rough as the tree grows fatter.

3. Just as blood flows through your body, sap flows through a tree. Inside the tree trunk and branches, tiny tubes carry water and minerals up from the roots to the leaves. More tubes carry the sugary food made by the leaves to all the other parts of the tree. Veins in each leaf are like tiny pipes carrying food and water.

4. Roots are the feet of the tree—only they're underground. They help keep the tree from falling down. The bigger the tree, the longer its roots have to be. The roots also help feed the tree, soaking up water and minerals from the soil.

How To Make Maple Syrup

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Homemade Maple Syrup
Yes, if you have only a few sugar maple trees, you can make your own maple syrup and sugar. The basic method has not changed from the time of the Indians. You boil off the water in the sap to get the sweet syrup. It's work! But it is fun and rewarding.

What Will You Need?
1. A hand drill and a bit (any 7/16 inch bit will do) to bore the hole.

2. Spouts -(one per hole) - manufactured spouts can be purchased from a maple equipment dealer

3. One container per tap hole to catch the sap such as a bucket or wooden, metal, or plastic pail. Rusty cans or pails may be used by placing a plastic liner or polyfilm bag inside the container. Another option would be a sap bag and handle. Very serviceable containers can be made from plastic gallon milk or cider jugs. These work well in combination with a wood, metal, or plastic spout. Use a small electric drill or other cutting implement to make a hole in the top of the flat side of the jug. Enlarge the hole so that it can be slipped over the spout.

4. For storing freshly gathered sap use clean galvanized tank or plastic trash cans or large pails.

5. Any deep metal pan like a canner or wash tub that will hold five gallons or more will serve as an evaporator pan for boiling the sap.

6. A fireplace or picnic arch in the back yard, even one temporarily made from brick, stone or cinder blocks to fit your boiling pan is adequate. A wood stove set up out of doors is also suitable. Don't use your kitchen stove indoors or you are sure to have trouble and a very high fuel bill. For best results you should purchase a evaporator from a local maple equipment dealer.

7. Dry, fast-burning wood is essential to provide the heat necessary for boiling. Slab wood, dead trees, etc. are suitable, if dry.

8. For testing to see when the syrup is done you need a syrup or candy thermometer.

9. Finished syrup should be stored in clean metal containers or glass jars that will seal - canning jars are ideal. If you plan on selling your syrup, containers can be purchased from a maple equipment dealer.

10. Caution - Be sure all collecting, boiling, and storing containers are clean to avoid off-flavor and other problems.

How to Do It

1. Be sure your trees are sugar maples. Hard maple and rock maple are other names for the same tree. A tree should be at least 10" in diameter for one tap hole and bucket. For every additional 8" in diameter another tap hole and bucket may be added. A tree 26" in diameter could have a setting of three buckets. Usually trees with lots of branches are better producers than those with small tops.

2. Drill the 7/16" hole 3" deep at a convenient height. Look for unblemished bark and do not bore directly over or under a former tap hole or closer than 4" from the side of an old tap hole. The hole does not have to be slanted.

3. Drive the spout in so that it is tight and can not be pulled out by hand, but don't over drive and split the tree.

4. Hang your bucket or container on the hook of the spout if it is a purchased one: or, if you have made your own, fashion a length of wire to serve as a hanger. Be sure to cover the bucket to keep out rain, snow and foreign material.

5. Make sure your fireplace, evaporator or cooking station is ready, wood at hand, and pan ready for the sap.

6. Sap has started to run. You have enough in your buckets to fill your pan for boiling - you are ready for the fire. Do not fill your pan to the top as it will boil over. A bit of butter or margarine rubbed at the top rim of the boiling pan will often keep it from boiling over. As the water boils away keep adding more sap to the pan. Do not have less than an inch in the pan or it may burn down. You can pour the cold sap right into the boiling sap. It will take a lot of boiling to get it to syrup as it takes about 10 gallons of sap to make one quart of maple syrup. A chimney of brick or stove pipe (4 to 6 feet long) on your arch or fireplace will be helpful in keeping the smoke away from the boiling sap so that the syrup will not darken or have an off-taste from the smoke.

7. Do not leave an accumulation of sap in the collecting buckets -especially in warm weather. Sap is like milk and will sour if left in the sun. Try to keep the sap in storage as cold as possible. Boil it as soon as you can.

8. Finished maple syrup will be 7 degrees F. above the temperature of boiling water at your elevation. Your syrup or candy thermometer will tell you this. If you have a larger operation you may get a syrup hydrometer and testing cup which will tell you when the syrup is done. The cup will require two or three cupfuls of syrup in order to make the test. Proper syrup will weigh at least 11 pounds per gallon. Do not get it beyond 11 1/4 pounds per gallon or it may form crystals in the bottom of the storage container.

9. Pour the hot syrup through a felt syrup filter or a special strainer as carried by equipment dealers. If you have neither one, a double layer of outing flannel may be used or, you may put the syrup in a container and let it cool for 12 hours or more. Sediment will settle to the bottom of the container and the clearer syrup may be carefully poured off. This syrup should then be reheated to at least 180 degrees or almost to boiling before it is poured into containers for final storage.

10. Pour the hot syrup into the clean, sterile canning jars and seal. Fill them full so that very little air will be in the jar. If laid on the side while cooling a better seal will result.

11.Store syrup in a cool place. A freezer is ideal. Properly prepared syrup will not freeze and a poor seal will not be as important when stored in a freezer.

12.You may also want to visit a commercial maple producer to pick up tips on how to make syrup. Most producers are friendly and will welcome your questions.

Maple Syrup Characteristics

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Maple Sap to Maple Syrup Conversion Chart

The chart below represents the number of Gallons of sap is needed to make just one Gallon of Maple Syrup. (*Jones Rule of 86)
* Jones Rule of 86 explaines that if the percent of sugar is known and used to divide into the constant 86, the number of gallons of sap needed to produce one gallon of finished syrup would be known.

Sugar Test	Gal. of Sap	Gal. of Syrup
1.0%	86.3	1
1.5%	57.5	1
2.0%	43.2	1
2.5%	34.5	1
3.0%	28.8	1
3.5%	24.7	1
4.0%	21.6	1
4.5%	19.2	1
5.0%	17.3	1

The Grades of Maple Syrup

Pure maple syrup is graded according to Federal USDA regulations, and is based on both color and flavor. The grades are:

US Grade A Light Amber, US Grade A Medium Amber, US Grade A Dark Amber, and US Grade B. Some states use a slightly different terminology, as does Canada, but the legal requirements for each grade are the same, regardless of what they are called. For example: Grade A Light Amber syrup is sometimes called Fancy Grade, and in Canada it is called No. 1 Extra Light.

Characteristics of Each Grade:
Grade A Light Amber, is very light and has a mild, more delicate maple flavor. It is usually made earlier in the season when the weather is colder. This is the best grade for making maple candy and maple cream. Grade A Medium Amber, is a bit darker, and has a bit more maple flavor. It is the most popular grade of table syrup, and is usually made after the sugaring season begins to warm, about mid-season.
Grade A Dark Amber, is darker yet, with a stronger maple flavor. It is usually made later in the season as the days get longer and warmer.
Grade B, sometimes called Cooking Syrup, is made late in the season, and is very dark, with a very strong maple flavor, as well as some caramel flavor. Although many people use this for table syrup; because of its strong flavor, it's often used for cooking, baking, and flavoring in special foods.

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Maple Words To Know

Arch – Firebox that the evaporator pan is placed on. Traditional evaporators were “wood fired” but there are arches that use oil, natural gas, propane, and even wood chips. Traditionally most arches have been lined with brick, but alternate materials such as ceramic lining or vermiculite are being used in many cases.

Baume Scale - Scale used to determine the density of maple syrup; this scale relates the density of syrup to a salt concentration of the same density.

Brix Scale - Scale comparing the density of maple syrup to that of a sugar solution with a known percentage of sugar.

Buddy - Term for the off-flavor (and odor) of syrup produced at the end of the sugaring season when trees begin to bud out, ranging from chocolaty to butterscotch to strongly bitter.

Chlorophyll -The green pigment in leaves that trap sunlight to produce sugar from carbon dioxide and water and gives the leaves their green color.

Draw-off – Valve where syrup is removed from the evaporator.

Evaporator – A pan placed on the arch designed specifically to concentrate the maple sap into maple syrup. The traditional evaporator employs a “flue” pan and ‘syrup” pan. The “flue” pan has an uneven or corrugated bottom that allows better heat transfer to the sap by providing increased surface area over a flat bottom pan. The “flue” pan is where most of the evaporation takes place. The “syrup” pan usually has a flat bottom and is where the final evaporation takes place before the maple syrup is “drawn-off”.

Finishing Pan – A small evaporator pan, usually gas fired, that is used for the final finishing of sap into maple syrup.

Grade - Designation assigned to pure maple syrup based on several attributes, including color, clarity, density, and flavor; guidelines by the US Department of Food and Drug Administration.

Grade A - The lightest grade of syrup, usually amber colored; from early season production. Has a lighter, more delicate flavor.

Grade B - Is darker in color with a more robust flavor, sometimes with overtones of caramel.

Grade C - Very dark syrup used for commercial use.

Hard Maple - Term for sugar and black maple trees.

Hydrometer - Glass measuring device containing a weighted bottom and a calibrated scale (Brix or Baume) which, when floated in syrup, indicates the density of the syrup; either a sap hydrometer used in cold sap or a sugar hydrometer used in syrup.

Maple Syrup – The liquid food derived by concentration and heat treatment of the sap of the maple tree (Acer) to which nothing has been added at anytime before, during or after it is made into the finished product. The density of finished maple syrup should measure between 66% to 67% (sixty-six to sixty-seven) by weight (brix) at 68° F.

Sugarsand – The mineral deposits that are concentrated during the evaporation process.

Refractometer - An optical measuring device used to accurately measure the density of sap or syrup by determining the refractive index (the bending of light passing through the solution).

Reverse Osmosis – Or hyper-filtration is the process of filtering maple sap at high pressure through a semi-permeable filter membrane that traps the concentrated sap on one side and allows the permeate (water) to flow out the other side. The use of reverse osmosis allows approximately 75 to 80 percent of the water to be removed from the sap before being introduced into the evaporator, saving energy and time.

Run - A flow of sap resulting from the right weather conditions.

Sap - A colorless liquid with a light, sweet taste that flows inside the maple tree. It is from this sap that maple syrup is produced. It takes approximately 30-40 gallons of sap to make one gallon of syrup.

Sap Bag - Usually a clear or blue bag that is connected to a sap bag handle to catch and hold the sap that comes from the maple tree.

Sap Bag Handle - A tin holder that holds a sap bag on a spile.

Sap Bucket - Bucket that hangs from a spile to collect sap from the maple tree.

Sap Bucket Cover - A cover that goes over the sap bucket to keep debrie and rain water out of the sap in the sap bucket.

Sap Run - The amount of sap collected in one day.

Spile/Spout – A small tube tapped into a taphole to carry the sap from the tree to a bucket or hooked directly into the sap tubing. Also known as a spout or spigot.

Soft Maple - Maple trees with less dense wood including silver, red, and box elder.

Sugarbush – A group of maple trees used for the production of Maple Syrup.

Sugarhouse – Building used to house the equipment used in maple syrup production. Traditionally this building houses an evaporator and has a cupola to allow the evaporating water vapor to escape.

Sugaring - Process of collecting maple sap and converting it into maple (Syruping) syrup; sugaring time refers to the time of year when the sap flows, best at 40 degree days and below freezing nights.

Sugarmaker – Person who makes maple syrup.

Sugar Maple – A maple tree that grows in the eastern United States and around the Canadian Great Lakes whose sap is used to make maple syrup. (Maple syrup can be made from the sap of many different species of native maple trees, but the most common are the sugar maple, Acer saccharum, and the black maple, Acer nigrum.)

Tap - The process of drilling into the tree and attaching a method of sap collection.

Taphole – Hole drilled into the tree to facilitate sap collection.

Tapping - Process of drilling a tap hole into the trunk of a maple tree for the purpose of collecting maple sap; either 5/17” or 5/16” hole approximately 3” into the tree.