Maple Sugaring

HOW TO MAKE MAPLE SYRUP

A WLFS BACKYARD LIVING SERIES EVENT

Seminar Overview

- Preparation for the Season
  - Tree selection, equipment and supplies, weather conditions
- Tapping Trees
- Gathering and Boiling Sap
- Packing the Syrup
- Enjoying the Fruits of Your Labor
  - Recipes for some sweet treats!

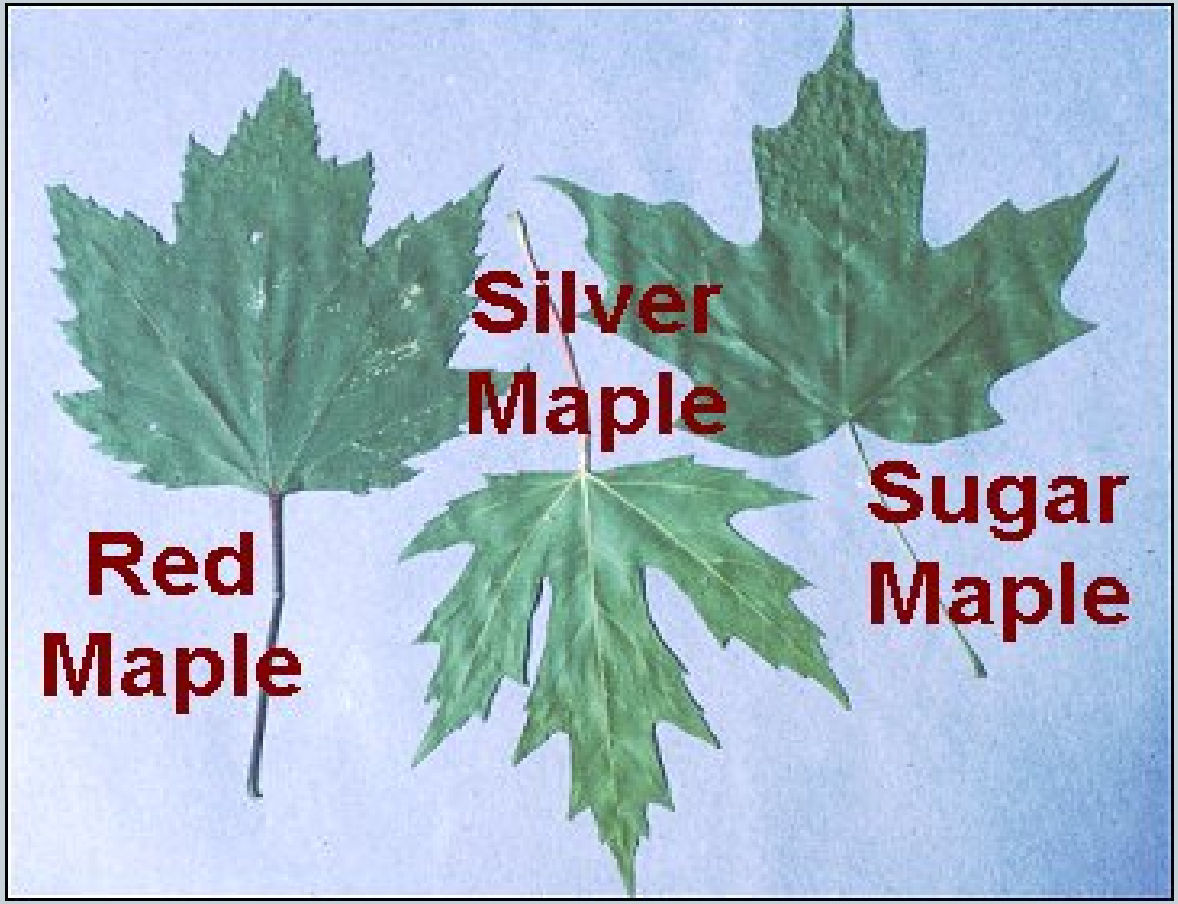
Maple Tree Identification & Selection

- Types of maple trees
  - Sugar, Black, Red, Silver
- How to identify the Sugar Maple

Sugar Maple Buds, Branches & Bark

Sugar Maple Leaf & Seeds

Maple Leaf Comparisons



Maple Tree Identification & Selection

- Select trees that are:
  - 12 inches in diameter (38 inches in circumference) or larger,
  - have the greatest exposure to sunlight, and
  - appear healthy and relatively free from damage.

Equipment & Supplies

- Sap buckets, covers/lids
- Taps – 5/16” or 7/16”
- Bulk storage containers/tanks
- Vegetable oil or other de-foaming agent
- Candy thermometer (1/4° increments) or hydrometer
- Evaporating or boiling pans/pots
- Heat source – fire pit, camp stove, gas grill, evaporator
- Fuel
- Filters for the sap and syrup
- Safety equipment

** Important Notes **

- Clean equipment
  - Edible, safe syrup
  - Healthy trees
- Food grade equipment
  - Edible, safe syrup
- Boiling location/set-up
  - Pot/pan considerations
  - Inside vs. outside
- Safety precautions
  - Open fire, hot equipment & containers, boiling hot sap & syrup

Stay Safe . . . and HAVE FUN!

Weather Conditions

- The temperature must drop below freezing (ideally temperatures in the 20's) at night and rise above freezing (ideally temperatures in the 40's) during the day for the sap to run. This happens most often in early spring.

- When the maple trees start budding (generally in late spring), sugaring is over, as the sap produces bitter syrup.

Tapping the Trees

These guidelines were developed to help you maintain the health of your trees and safeguard the productivity of your crop for years to come!

- Tap trees no smaller than 12” in diameter.
- Place 1 tap hole in trees 12” to 18” in diameter.
- Place 2 tap holes in trees greater than 18” in diameter.
- Place 3 tap holes in trees greater than 27” in diameter.
- *Remember: the more holes, broken branches, scars, etc., the less pressure can build up in the tree, reducing sap flow.*

Tapping the Trees

- Vermont Forestland UVA Requirements:

	Standard Spout (5/16″)	Large Spout (7/16″)
0 taps	Less than 10″ diameter (less than 29″ circumference)	Less than 12″ diameter (less than 35″ circumference)
1 tap	10-14″ diameter (29-47″ circumference)	12-18″ diameter (35-60″ circumference)
2 taps	16-20″ diameter (47-66″ circumference)	20″ & over, diameter (60″+ circumference)
3 taps	22″ & over, diameter (66″ & over circumference)	Prohibited
4+ taps	Prohibited	Prohibited

Tapping the Trees

- Tap height - about 3 feet high
- >6 inches horizontally and >2 feet vertically from a former tap hole; don't re-tap old holes
- Above a large root or below a large branch
- On the south side of the tree
- If more than one tap, distribute the tap holes around the circumference of the tree
- Avoid any damaged area of the tree
- The drill bit should match the tap size (e.g. a 5/16" tap will require a 5/16" bit).

Tapping the Trees

- 7/16” tap: drill a hole 2 to 2 ½ inches deep
- 5/16” tap: drill no more than 1 ½” deep
- Wrap a piece of tape around the drill bit to use as a guide.
- Drill at a slight upward angle to facilitate downward flow of sap from the hole, and to prevent the sap from pooling.

Tapping the Trees

- Light brown shavings = healthy
- Dark brown shavings = unhealthy; drill another hole in a different location on the tree
- To avoid areas of discoloration and decay, don’t tap within old tap parameters mentioned earlier
- Don't re-tap existing holes in any given year to expose new wood, or drill new holes to prolong the sap run.

Tapping the Trees

- Clear any wood shavings
- Insert the tap into the loop on the hook (hook facing outward), and then insert the tap into the tap hole
- Gently tap the tap into the tree with a hammer (avoid splitting!)
- If the sap is flowing, it will drip from the tap right away!

Tapping the Trees

- Hang the bucket
- Attach the lid
- You're in business!

Collecting the Sap

- Pour sap from the bucket into a storage container
- Filter out any foreign material with cheesecloth
- Discard frozen, yellow, cloudy or thick sap – do not mix it with good, clear sap.
- Check your trees and equipment each time you collect your sap to ensure all is well.
- Watch for early bud break of red maple. This will cause buddy sap and produce an off-flavor in the syrup.

Collecting the Sap

- One tap = 1 gallon of sap per sap run
- Expect 8-10 runs during the season.
- Sap:Syrup ratio is roughly 40:1
- Sap is perishable, treat it like milk
- Gather and boil daily if possible; no longer than 7 days since harvest
- Store at 38°F or colder
  - Shady spot in the snow
  - Refrigerator or freezer

Boiling the Sap

- Fill pot/pan ¾ full with sap
- Place onto heat source and begin heating
- Sap boils around 212°F
- Sap level will drop; sap will become concentrated; boiling temperature will increase
- Add more sap when level drops to ¼ - ½ full
- Keep heat high and maintain boil (212°F-218°F)
- Do not stir; watch for scorching
- Use de-foamer as needed
- SAFETY CONSIDERATIONS

Boiling the Sap

- Watch for golden color
- Sap temperature at 217°-218°F, still very fluid
- Transfer concentrated sap to a finishing pot/pan

  If you move your operation indoors at this point, be sure to fully extinguish your outdoor heat source.
- Continue boiling in new pot/pan
- Keep covered but watch closely – avoid boil overs!
- Thickens to syrup – sheeting or aproning
- Finished at 219°F or 67°Brix
- Cover and remove from heat

Thermometer vs Hydrometer

Filter, Pack & Store the Syrup

- Filter or syphon hot syrup
- Keep syrup covered to avoid evaporation and retain heat
- Can syrup while hot (185°F-190°F) in clean, food-grade containers
- Store in a cool, dry place or freeze
- Syrup that is not hot packed: keep in refrigerator or freezer

Clean Up and Grading

- Clean Up
  - Hot water; triple rinse
  - No detergent on filters
- Grading the Syrup
  - Grade kit
  - Considerations when selling your syrup

Sweet Treats – Sugar on Snow

Sugar on Snow

- Boil maple syrup to 233°F on a candy thermometer. DO NOT STIR.
- When the syrup reaches 233°F, drizzle it over pans of packed snow or crushed ice – or directly onto fresh snow outside!
- It will turn into taffy-like candy.
- Twirl it onto a fork or popsicle stick and enjoy!

Sweet Treats – Maple Cream

- Bring 3 Cups light to medium grade maple syrup to a boil in a pot over medium/low heat. DO NOT STIR. This will cause large crystals to form and your cream will be grainy rather than smooth.
- Boil until it reaches 235°F. This will take around 15 minutes.
- While the syrup is boiling, prepare an ice bath: a pot set in a bowl of ice.
- Without stirring, remove syrup from heat immediately. Pour the syrup into the pot in the ice bath.
- Leave it until it the syrup drops in temperature to 100°F. Do not disturb it at all while it rests.
- Once the syrup reaches 100°F, remove the pot from the ice bath and start gently stirring the syrup. Avoid stirring vigorously, as that will beat air into the syrup.
- Keep stirring. The syrup will start to lighten. After about 30 minutes of stirring the syrup will be very light but still be glossy with the consistency of cream. Continue stirring.
- The syrup will now finish crystallizing, set up and will lose its glossy sheen. Once your spoon starts to leave paths in the syrup you can stop stirring.
- Pour the Maple Cream into your jars right away before it becomes too difficult to pour.
- Maple Cream will last up to 6 months in the refrigerator.

Sweet Treats – Maple Candy

- In a large heavy-bottomed saucepan, bring 2 Cups maple syrup to a boil over medium-high heat stirring occasionally. Boil until syrup reaches 235°F on a candy thermometer.
- Remove from heat and cool to 175°F without stirring, about 10 minutes.
- Stir the syrup rapidly with a wooden spoon for about 5 minutes until the color turns lighter and mixture becomes thick and creamy.
- Pour into molds. Set aside to cool. Once cool, unmold candy. Store in airtight containers for up to 1 month.

Resources

- **WLFS Staff**

- **UNH Cooperative Extension:**

https://extension.unh.edu/resource/maple-sugaring-tips-beginners-and-backyard-maple-sugar-producers

- **University of Vermont Proctor Maple Research Center**

https://www.uvm.edu/~pmrc/

- **Forums:**

Maple Trader.com

http://www.sugarbush.info/forums/

Open Houses - 2019

- **New Hampshire Maple Producers Association**

Maple Weekend 21 & 22 March

https://nhmapleproducers.com/

- **Vermont Maple Sugar Makers' Association**

Maple House open weekend: 21 & 22 March

https://vermontmaple.org/about-us/


DRYGUARD
Rubbermaid
DRINKING WATER


DRYGUARD
200 DAY ALL SAND
GUARANTEE

Backyard Living Series:

How to Make Maple Syrup

Brought to you by:

Step #1: Identify Maple Trees

All native maples can be tapped for sap. The sap gathered from all of them can be boiled down into syrup. The most commonly tapped tree in our area is the Sugar Maple because its sap has a higher concentration of sugar in it. (Maple trees in order of sap sugar concentration, from highest to lowest: Sugar, Black, Red, Silver.)

How to Identify Maple Trees:

- Maples have opposite branch and bud patterns. Find trees that are 12 inches in diameter (38 inches in circumference) or larger, have the greatest exposure to sunlight, and appear healthy and relatively free from damage.

Opposite branch and bud pattern of the Sugar Maple

Sugar Maple bark, buds, and twigs

- The Sugar Maple has sharp brown buds, brown or chocolate-colored twigs; bark is gray on immature trees, brown on mature trees, with vertical grooves and ridges.
- The Red Maple has round red buds, red twigs, early bud break. Bark is gray to brown, smooth on young trees and shaggy on mature trees.

Step #2: Gather Your Syrup Making Equipment

Below is a handy checklist of equipment and supplies needed to gather and process sap into maple syrup.

Remember, the health of your trees, and the quality and safety of your syrup are very important. Therefore, use only clean equipment. Clean your taps, buckets and lids, collection vessels, etc. prior to use each season with a mixture of 1 part unscented household bleach to 20 parts clean water. Use a brush or cloth to scrub your supplies. Triple rinse all with hot water.

- Identify healthy, sizable maple trees to tap (see Step 1).
- Sap buckets (aluminum or plastic), bucket covers/lids (to prevent rain, snow, and foreign material from getting into the bucket), and/or other sap collection vessels such as spring water jugs and 5 gallon pails. *All sap containers must be food grade vessels only.*
- 5/16" or 7/16" taps (also called spiles and spouts), hooks to attach to the tap and used to hang the bucket, drill and bits (5/16" or 7/16"), hammer (to gently set the taps in the trees), pliers (to remove taps)
- New, food grade, clean plastic stock tanks, juice concentrate barrels, etc. to store your sap in bulk. Cheesecloth to filter any solids (like bark) when transferring sap from the collection bucket to a storage container.
- Vegetable oil, butter, or food grade de-foaming agent for boiling
- A quality candy or maple thermometer calibrated in 1/4°F with a range of 50°F to 300°F.
- Sap and syrup hydrometer and test cup (necessary only for the serious enthusiast or if you plan to sell your syrup)
- Evaporating pan* and smaller finishing pans or pots. These must be lead-free; stainless steel is the best (lead test kits are available at most hardware stores).
- Arch, fire pit, woodstove, camp stove, gas grill.
- Sufficient fuel to take you through the process: dry cordwood or propane/fuel. If using wood to boil, plan on at least 1/2 cord per 50 taps. Wood should be split into small pieces – about 2"-3" in diameter.
- Synthetic or wool, flat or cone filters and paper pre filters for sap and syrup.
- Food grade containers, plastic or Mason jars, new caps and lids for storing the finished syrup.
- Safety equipment – fireproof gloves, fire extinguisher, other personal protective equipment

**Helpful Tips:*

Depending upon the amount of sap you need to boil, plan ahead for your processing. You may want to consider a canning/lobster pot or turkey fryer set-up outside over a fire pit, outdoor grill, or camp stove. For the serious enthusiast, it's recommended that you purchase an arch and evaporator.

Avoid boiling down large quantities of sap in your kitchen. The resulting steam from such an endeavor has been known to peal wallpaper from the walls, and leave a sticky film on every surface! It is highly recommended to boil your sap outside or in a sugar shack. If you do boil outdoors, make certain you are in compliance with any local regulations.

Step # 3 – Wait for the Right Temperature Range

The temperature must drop below freezing (ideally temperatures in the 20's) at night and rise above freezing (ideally temperatures in the 40's) during the day for the sap to run. This happens most often in early spring. When the maple trees start budding (generally in late spring), sugaring is over, as the sap produces bitter syrup.

Step #4 – Tapping Maple Trees

The below guidelines were developed to help you maintain the health of your trees and safeguard the productivity of your crop for years to come!

Tapping Guidelines

- Tap trees no smaller than 12" in diameter.
- Place 1 tap hole in trees 12" to 18" in diameter.
- Place 2 tap holes in trees greater than 18" in diameter.
- Place 3 tap holes in trees greater than 27" in diameter. *Remember: the more holes, broken branches, scars, etc., the less pressure can build up in the tree, reducing sap flow.*

NOTE: Vermont Forestland UVA Requirements for tapping:

	Standard Spout (5/16″)	Large Spout (7/16″)
0 taps	Less than 10″ diameter (less than 29″ circumference)	Less than 12″ diameter (less than 35″ circumference)
1 tap	10-14″ diameter (29-47″ circumference)	12-18″ diameter (35-60″ circumference)
2 taps	16-20″ diameter (47-66″ circumference)	20″ & over, diameter (60″+ circumference)
3 taps	22″ & over, diameter (66″ & over circumference)	Prohibited
4+ taps	Prohibited	Prohibited

- The height of the tap hole should be at a height allows for easy collection (about 3 feet high is recommended). If the tree has been tapped in previous seasons, do not tap within 6 inches of the former tap hole. Ideally, the tap hole should be above a large root or below a large branch, on the south side of the tree. If more than one tap is to be placed in the same tree, distribute the tap holes around the circumference of the tree. Be sure to avoid any damaged area of the tree.
- Most taps require either a 7/16” or 5/16” bit. The drill bit should match the tap size (e.g. a 5/16” tap will require a 5/16” bit).
- For 7/16”, drill a hole 2 to 2 ½ inches deep. It may be helpful to wrap a piece of tape around the drill bit 2 ½ inches from the tip to use as a guide. (For 5/16”, drill no more than 1 ½” deep.)
- Drill at a slight upward angle to facilitate downward flow of sap from the hole, and to prevent the sap from pooling.
- The shavings from the drilled tap hole should be white to light brown, indicating healthy sapwood. If the shavings are dark brown, drill another hole in a different location.
- To avoid areas of discoloration and decay, don't place new tap holes within 6 inches horizontally and at least 2 feet directly above or below old tap holes. Don't retap existing holes in any given year to expose new wood, or drill new holes to prolong the sap run.

- Clear any wood shavings from the edge of the hole. Insert the tap into the loop on the hook (hook facing outward), and then insert the tap into the tap hole.
- Gently tap the tap into the tree with a hammer (do not pound the tap into the tree, as this may cause the bark and wood to split). If the sap is flowing, you should immediately see sap dripping from the tap.

- Hang the bucket by inserting the hook into the hole on the rim of the bucket.
- Attach the lid to the bucket.

- Don't use a tap-hole sanitizing agent.
- Remove spouts from tap holes immediately after the season has ended.

Step #5 – Gather the Sap

Expect 8-10 runs during the season. During each run, one tap will produce about 1 gallon of sap – or 8 to 10 gallons throughout the season.

Sap is perishable, so treat it as you would milk. Sap should be gathered from your buckets and collection tanks, and boiled daily. Otherwise, it should be kept cold (38 degrees or colder) in a storage container until it is ready to be boiled. If you can't boil right away, be sure to boil the sap within 7 days of harvesting. If there is still snow on the ground, you may keep the storage containers outside, located in the shade, and packed with snow. You can also store the sap in your refrigerator, or for longer term storage, in your freezer.

When collecting sap, pour it from the bucket into a storage container, using cheesecloth to filter out any foreign material. If a portion of the sap is frozen, throw away the frozen sap. Discard yellow, cloudy or thick sap – do not mix it with good, clear sap.

Check your trees and equipment each time you collect your sap to ensure all is well. Watch for early bud break of red maple. This will cause buddy sap and produce an off-flavor in the syrup.

Jones Rule of 86

- To determine the number of gallons of sap required to make one gallon of maple syrup, divide the number 86 by the percent of sugar content (you'll need a sap hydrometer and cup to determine sugar percentage).
- Most sap has about 2% sugar content. 86/2% = 43 gallons of sap needed for 1 gallon of syrup. 34.4 gallons if 2.5%, 28.7 gallons if 3%.

Step #6 – Boil the Sap

Boiling the sap:

- Fill your evaporating pan or pot ¾ full with sap. Place it onto the heat source. The sap will start to boil around 212°F. Once this happens, the sap level will drop, it will become more concentrated, and the boiling temperature will increase.
- When the sap level drops to ¼ – ½ the depth of the pot or pan, add more sap from your collection container.
- Keep the heat high and try to maintain the boil. Do not stir the sap. Continue to add more sap to maintain a constant sap level in the pan and to maintain a boiling temperature between 212°F and 218°F. Keeping a shallow liquid depth (less than two inches) in the pan provides for better boiling and reduces boiling time. However, the risk of burning the pan or scorching the syrup is greater if the sap level is too shallow.
- Whenever maple sap is boiled, it tends to foam up and boil over the side of the pan. Use your vegetable oil (1-2 drops) or other de-foaming agent to help prevent the sap from boiling over the edges of the pan or pot.

Boiling sap can be a fun family project! However, a responsible adult must be present to monitor the boiling process once it has begun. Fire and burn safety must be your highest priority, especially when young children are present. As sap turns to syrup, it becomes increasingly hot and sticky and can cause severe, painful burns when spilled or mishandled. Use gloves and/or protective gear when handling hot syrup and equipment. Also, contact local fire warden about necessary fire permits, area fire hazard warnings, and always extinguish the fire.

Transfer to a finishing pan or smaller pot:

- It can be very difficult to finish syrup on a large flat pan or pot over an open fire. Stop adding sap and watch the boiling temperature very closely. The boiling sap will take on a golden color.
- Once the sap has sufficiently boiled down, but still has a very fluid texture, remove the pan with the concentrated sap from the fire (the sap's temperature should be around 217°F to 218°).
- Transfer the concentrated sap to a smaller finishing pan or pot and complete the process on a controlled heat source such as a gas burner, camp stove or kitchen range.

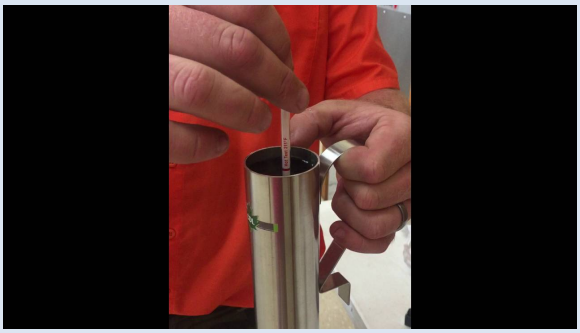
If you move your operation indoors at this point,
be sure to fully extinguish your outdoor heat source.

Temperature

- Boiling temperature is a function of density. The denser a liquid, the higher the boiling temperature.
- Syrup is denser than water. Syrup boils at 7.5°F above the boiling temperature of water, or generally at 219°F.
- Use a good quality candy thermometer to measure boiling temperatures. A thermometer that can read accurate temperatures from 50°F to 300°F is needed.
- When finishing syrup, check the boiling point of water for your altitude and atmospheric conditions; then add 7.5°F to the observed boiling point of water for the correct temperature to have the proper density syrup.

Complete the boiling:

- Continue to boiling the sap in the finishing pan or smaller pot.
- Keep the pan covered completely in sap and to prevent scorching or burning the pan.
- It is important to watch the boiling sap very closely as it approaches syrup, since it is more likely to boil over at this point.
- Watch for the sap to take on the consistency of syrup. One way to check for this is to dip a spoon into the sap: syrup will spread across and "stick" to the spoon as it runs off. This is called "sheeting" or "aproning."
- If you have a candy thermometer, finish the boil when the temperature is 7.5°F above the boiling temperature of water OR about 219°F. (See *Temperature* inset, for further instruction.) You can also test to see if your maple syrup is ready by using a hydrometer (see *Proper Density* inset).
- Once the sap has turned to syrup, turn off the heat, remove the pan from the burner and cover it. This avoids further water loss from the syrup and maintains proper syrup density.

Proper Density • Syrup density is measured with a syrup hydrometer and cup. • Standard density maple syrup is 67º Brix at 60ºF in NH and VT. Syrup at this density consistently boils at 7.5ºF above the boiling temperature of water. • Heavy syrup (syrup that is too dense – or over 67º Brix) forms crystals at the bottom of the container. • Light syrup (syrup that isn't dense enough – or under 67ºBrix) can spoil and develop mold. • It may be impractical to measure syrup density in a backyard operation, so rely on boiling temperature instead to determine proper syrup density. (See *Temperature* inset.)	

Step #7 – Filter, Syphoning, and Packing the Syrup

- Filter the hot syrup through clean wool felt or synthetic (Orlon) syrup filers to remove niter and other debris that may have been in your sap. Niter, or sugar sand, occurs naturally. It is gritty and gives the syrup a cloudy appearance.
- Filters can absorb a lot of syrup. When producing small volumes of syrup, syphoning works well. Allow the syrup to settle and the niter and debris will drop to the bottom of the container. Syphon the top majority of the syrup out of one container to another – leaving a small portion of the syrup in the original container with the niter and debris. Be sure the syphon does not touch the niter or the bottom of the original container to prevent the transfer of unwanted debris into the new container.
- Cover the filtered or syphoned syrup to stop evaporation and to retain heat.
- Wash/rinse filters in hot water only. Do not use soap or detergents.
- Syrup must be packed (or bottled/canned) hot – 185°F to 190°F. Re-filter the syrup if it is reheated to over 195°F. Only use new, clean containers. Put the cap on immediately and place the container up-side-down to seal it and then on its side to cool.
- Store your finished syrup in a cool dry place. Packed syrup can be frozen for longer storage. Syrup that is not hot packed should be kept in the refrigerator or freezer.
- If any mold does form on your syrup, it is generally harmless and can be removed by gently heating and skimming off.

Clean Up

Use lots of hot water to clean your equipment. Triple rinse items to ensure they are clean. Let filters air dry and do not use detergent. Only use non-metallic scrub brushes.

Grading

- Use an accurate grade kit, temporary ones fade over time.
- Grade is based upon syrup color with good flavor.
- If you sell your syrup, ensure you are following all requirements, which can include: ensuring the container is marked with your name, address, volume and grade must be on it. Check with your state department of agriculture for more information.

SWEET TREATS

Sugar on Snow

1. *Boil maple syrup to 233ºF on a candy thermometer. DO NOT STIR.*
2. *When the syrup reaches 233ºF, drizzle it over pans of packed snow or crushed ice – or directly onto fresh snow outside!*
3. *It will turn into taffy-like candy. Twirl it onto a fork or popsicle stick and enjoy!*

Maple Cream

1. *Bring 3 Cups light to medium grade maple syrup to a boil in a pot over medium/low heat. DO NOT STIR. This will cause large crystals to form and your cream will be grainy rather than smooth.*
2. *Boil until it reaches 235ºF. This will take around 15 minutes.*
3. *While the syrup is boiling, prepare an ice bath: a pot or pan set in a bowl of ice.*
4. *Without stirring, remove syrup from heat immediately. Pour the syrup into the pot in the ice bath.*
5. *Leave it until it the syrup drops in temperature to 100ºF. Do not stir; let it rest.*
6. *Once the syrup reaches 100ºF, remove the pot from the ice bath and start gently stirring the syrup. Avoid stirring vigorously, as that will beat air into the syrup.*
7. *Keep stirring. The syrup will start to lighten. After about 30 minutes of stirring, the syrup will be very light but still be glossy with the consistency of cream. Continue stirring.*
8. *The syrup will now finish crystallizing, set up, and will lose its glossy sheen. Once your spoon starts to leave paths in the syrup you can stop stirring.*
9. *Pour the Maple Cream into your jars right away before it becomes too difficult to pour.*
10. *Maple Cream will last up to 6 months in the refrigerator.*

Maple Candy

1. *In a large heavy-bottomed saucepan, bring 2 Cups maple syrup to a boil over medium-high heat stirring occasionally. Boil until syrup reaches 235ºF on a candy thermometer.*
2. *Remove from heat and cool to 175ºF without stirring, about 10 minutes.*
3. *Stir the syrup rapidly with a wooden spoon for about 5 minutes until the color turns lighter and mixture becomes thick and creamy.*
4. *Pour into molds. Set aside to cool. Once cool, unmold candy. Store in airtight containers for up to 1 month.*

<u>Resources:</u>

- West Lebanon Feed & Supply Staff
- University of NH Cooperative Extension: https://extension.unh.edu/resource/maple-sugaring-tips-beginners-and-backyard-maple-sugar-producers
- University of Vermont Proctor Maple Research Center: https://www.uvm.edu/~pmrc/