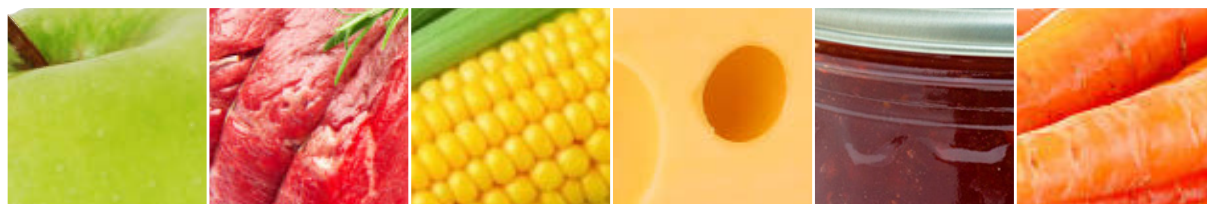


ENHANCING THE SAFETY OF LOCALLY PREPARED FOODS



Publication FST-311NP

What do I need to know to sell MAPLE SYRUP at the farmers market?

What is maple syrup?

Pure maple syrup is defined as a thick, sweet liquid produced from sap extracted from maple trees (primarily from sugar maple). To produce syrup, the sap is processed with heat to concentrate it to no less than 66 percent sugar by weight.

This publication refers to maple syrup as it is strictly defined by the Food and Drug Administration Code of Federal Regulations (FDA 2018). There are other types of syrups that can be made (e.g., birch syrup, alder syrup, sycamore syrup), but they will not be covered in this publication.

Table 1. Maple syrup is generally produced using the following steps:

1	Tap maple tree in late winter/early spring
2	Collect sap in plastic tubing or bucket.
3	Transport in food grade container to be processed
4	Filter sap to remove debris
5	Boil sap until sugar reaches 66-68%
6	Filter to remove impurities
7	Bottle syrup between 180-190 °F

Why produce maple syrup?

Maple syrup can be sold for a premium because it is only produced during a short season in the late winter months. Producing maple syrup can be especially advantageous for landowners because it is produced when other farm products are not. Additionally, maple syrup has high nutritional value, is locally produced and comes from the sustainable harvest of a renewable resource.

What types of trees produce sap for maple syrup?

Generally, sugar maples produce sap with the highest sugar concentration, but black maples are a close second. Red, and silver maple trees can also produce sap, but with lower sugar concentrations. Maple sap is generally harvested in the northern Midwest, Middle Atlantic, and Northeast U.S. because these locations are in range and have the best stocking for maple species. The harvest season for maple sap is short and occurs only when the sap begins to flow up the tree. This occurs as the weather starts to warm giving warm days and cold nights. The best time to harvest sap depends on the region and elevation.

What are the different types of maple syrup?

There are two grades of maple syrup (Grade A and processing grade). The U.S. Department of Agriculture further classifies Grade A syrup by flavor and appearance (USDA 2015). Processing grade is not used for table syrup, but is acceptable as an ingredient in value added products. Grading is voluntary, but may be necessary if you are selling to a processor that needs a specific grade (USDA, 2015). Maple syrup equipment dealers and other local producers have tools for evaluating maple syrup. Standardized color test kits to determine maple syrup grade are also readily available for purchase online.

What influences how my maple syrup will taste?

The color of the syrup generally indicates the flavor. Light-amber-colored syrup has a lighter or more delicate flavor, and dark syrup has a stronger, more maple-like taste.

"This work is supported by Food Safety Outreach Program [grant no. 2016 0020-25888/project accession no. 1010671] from the USDA National Institute of Food and Agriculture"



What are some safety considerations for producing maple syrup?

Maple syrup is produced by boiling the sap. Boiling evaporates the water from the sap, concentrating the syrup, increasing the sugar content and heat causes the chemical reactions that give syrup its color and flavor. To produce maple syrup, the sugar content must be at least 66 percent. At or above this high concentration of sugar, harmful bacteria cannot grow and is considered a low risk product. The measurement for the sugar level/concentration (sugar density) is called “degrees Brix.” If the sugar content is lower than 66 percent, there could be safety concerns. Knowing your product’s sugar content (degrees Brix) will help ensure that you are in regulatory compliance.

How do I measure my product’s degrees Brix?

Producers can purchase a simple honey or syrup refractometer to inexpensively determine the degrees Brix of their syrup. Make sure that the refractometer that you purchase has a scale between 58-90 degrees Brix. Maple syrup is considered finished and ready for consumption, when it is between 66-68 degrees Brix. Make sure that you record the degrees Brix of each batch of your maple syrup.

What are some other steps to producing high-quality maple syrup?

- ▶ Check the color of wood when drilling the tap hole. Cream-colored wood shavings are good and indicate a healthy tree; brown wood shavings may indicate rotten and/or unhealthy wood (Hansen et al., 2010).
- ▶ Clean the wood shavings from the hole (but do not blow into or around the hole; do not put any sanitizer or spray in the hole) (Hansen et al., 2010)
- ▶ Replace plastic spiles each year with new ones, or sanitize metal ones that have previously been used. This can be done by either boiling in water, or submerging in a 20:1 unscented household chlorine bleach solution, followed by rinsing in potable hot water. (Hansen et al., 2010; Hopkins, 2016).

There are two types of collection methods: storage containers (figs. 1 and 2) and plastic tubing (fig. 3).

Storage Containers

- ▶ Use clean and sanitized (20:1 unscented household chlorine bleach solution), undamaged, nonmetallic (lead-free) food-grade buckets; containers (with lids); or capped gallon jugs for sap collection. Traditionally, galvanized bucket are used, but these are not ideal because over time they can pit and rust, leaching lead into the sap.
- ▶ Process sap within two days of collection (sap can be kept for up to a week if temperatures stay below freezing). After two days microorganisms can grow in collected sap and lower the quality of the syrup. If temperatures rise, sap can spoil and must be discarded.

Plastic Tubing

- ▶ Check tubing frequently for mold growth or any wildlife interference (e.g., chewing, physical disturbance of tube from spile).

- ▶ At the end of season, immediately clean tubes with hot water instead of a chlorine bleach solution.



Figure 1. Covered bucket for maple sap collection. (Photo courtesy of Phil Meeks, Virginia Cooperative Extension.)



Figure 2. Plastic container with lid for maple sap collection. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)



Figure 3. Plastic tubing connecting multiple trees collecting maple sap. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)

- ▶ Transport sap from collection site to processing location using only cleaned and sanitized food-grade containers or storage tanks.
- ▶ Filter sap to remove foreign materials prior to boiling (fig. 4).



Figure 4. Filtering maple sap through cheesecloth to remove particulates. Use of cheesecloth is good for home use, but when processing syrup for sale, it should be filtered with an Orlon filter or filter press. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)

- ▶ Boil sap using a lead-free evaporator. Smaller operations can simply use large food-grade kitchen pots (fig. 5).



Figure 5. Boiling sap over an open fire to remove water and concentrate into syrup. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)

- ▶ Use a candy thermometer to measure the finishing temperature of maple syrup (fig. 6). Generally, sap reaches 66-68 percent sugar at 7.5 degrees above the boiling point of water. The boiling point of water at sea level is 212 F, therefore this generally occurs at 219.5 F (Hansen et al. 2010). However, elevation and daily barometric pressure will influence the boiling point, so it should be determined on the day of processing.



Figure 6. Using a candy thermometer to take the temperature of the syrup during cooking. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)



- ▶ Ensure that the percent sugar is not too low or too high by testing the degree Brix with a refractometer. If syrup has a Brix less than 66, the syrup could spoil. If it has a Brix more than 68, sugar crystals can form within the container.
- ▶ Filter hot (185-190 °F) finished syrup through approved filtering materials, available for purchase at maple syrup equipment retailers.
- ▶ Bottle syrup while it is hot (185-190 °F) using clean sanitized bottles, jars, or other commercially available containers (fig. 7). Reheat syrup (185-190 °F) if bottling temperature drops below 180 °F.
- ▶ Minimize air headspace in the top of bottles.



Figure 7. Bottling finished maple syrup for sale. (Photo courtesy of Paxton Allgyer, Virginia Master Naturalist.)

- ▶ Store bottles in a cool, dry place.
- ▶ Clean all equipment with hot water and triple rinse with potable hot water. **Do not** use soaps or detergents to clean equipment because they can ruin syrup flavor (Hopkins, 2016).

What are the steps I need to take if I want to sell the maple syrup that I have produced?

1. Confirm that your product meets the definition of maple syrup.
2. Decide where you are going to produce your product.
 - Out of your inspected home kitchen (or sugar house)?
 - Out of an inspected community or commercial kitchen?

3. Become familiar with the regulatory process of starting a food business. Refer to the Virginia Department of Agriculture and Consumer Services' (VDACS) webpage Home & Commercial Kitchen-Based Businesses for more information.
4. Complete and submit the correct application that pertains to where you will be producing your maple syrup. Use the Application for Home Food Processing Operation or the Application for a Commercial Kitchen Food Processing Operation. Applications and further instructions can be found on VDACS' webpage Home & Commercial Kitchen-Based Businesses.
5. VDACS will review your application for completeness and contact you with further questions and/or to schedule an inspection.
6. Comply with all regulatory and labeling requirements as stated by VDACS. Consider including the grade of the syrup on the label.

How do I store my maple syrup?

Maple syrup must be stored and sold in approved containers with sealed lids; the containers must be stored in a cool, dry place while unopened. After opened, maple syrup should be stored in the refrigerator to prevent mold growth.

Additional Resources

- Blumenstock, M., and K. Hopkins. 2007. *How to Tap Maple Trees and Make Maple Syrup*. University of Maine Cooperative Extension. Bulletin 7036. <https://extension.umaine.edu/publications/7036e/>.
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