

7. Maple Production

Note: The standards for maple production may also be applied to birch syrup production. In this section, "maple" may be replaced by "birch" and "maple sugaring" or "maple production" by "birch syrup production" as soon as it is necessary for the standards to be applied to this type of production. Similarly, if necessary, the term "sugar bush" may designate the birch syrup production site.

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In the production of maple syrup or its by-products, care shall be taken to ensure that the characteristic maple flavour predominates. Organic standards shall be respected during all stages of maple syrup production, from the maintenance and development of the sugar bush, through the collection and storing of the maple sap, to the processing of the sap into syrup and derived products. This includes the washing and the sterilization of equipment and the storage of finished products.

It is for this reason that general organic production standards are fully applicable to maple production. This includes keeping of records, preparing detailed maple growing operation plans including the following elements: sugar shacks, pumping stations, location of pipe lines, the number of taps per pipe line and cardinal points, the history of each maple operation, a comprehensive area plan, etc.

Producers must be committed to respecting governmental regulations currently in effect with regards to maple products (LRQ, p. 29, a 40, Chap. 8). These regulations refer to the product's composition and quality, cleanliness of premises, classification, inspection, containers and packaging, product identification, fuels, etc.

7.1 Sugar Bush Development and Maintenance

7.1.1 General Principles

Organic maple syrup production should involve management practices respectful of sugar bushes and their ecosystems. Development and maintenance shall focus on preserving the sugar bush ecosystem and improving tree population vitality over the long term.

7.1.2 Plant Diversity

Producers should encourage species diversity in the sugar bush, in particular companion species to the sugar maple. Companion species should represent a minimum of 15% of the tree population within the sugar bush. The growth of these companion species shall be encouraged if they represent less than 15% of the tree population.

It is prohibited to systematically clear undergrowth and brush, even when they are very abundant. This vegetation may, however, be cut in order to clear paths and to facilitate movement.

7.1.3 Thinning

When necessary, or when requested by the forest manager, tree thinning shall be reduced to a strict minimum and also be well distributed throughout the sugar bush. For clearings larger than those prescribed in these standards, the operator shall make use of professional services that will respect sugar bush standards, such as those applied to land on public property.

7.1.4 Tree Protection

In order to preserve plant diversity and the growth of young trees, access to the sugar bush by farm animals (e.g., beef or dairy cattle, pigs, or domestic deer) is forbidden at all times. The pipeline network shall be installed so as not to damage trees or stunt their growth.

7.1.5 Fertilization

Authorized soil amendments for sugar bushes include wood ash, agricultural lime and natural fertilizers without synthetic additives (or any other product appearing in Appendix A, Section A1.1).

7.1.6 Pest Control

Understanding the habits of pests that may attack the sugar bush or production equipment, and the search for balanced solutions to these attacks, are the best ways of combating pests. For squirrels and other destructive pests, substances listed in Appendix A, Sections A1.4 and A1.5, as well mechanical and glue traps are permitted, as are natural repellents, such as cayenne and mustard pastes. When their populations are too high, animals may be hunted. Poisons of any kind are prohibited. Only products appearing in Appendix A, Section A1.3 and A1.4 can be used to control diseases or insects within the sugar bush.

7.2 Tapping

7.2.1 General Principles

Tapping practices shall be those intended to minimize risks to the health and longevity of the trees.

7.2.2 Tree Diametre and Number of Taps

The following table indicates the maximum number of taps that a healthy maple can support, based on its C.H.D., a tree's diametre measured at a height of 1.3 metres (4.3 feet) above the soil surface. No maple may have more than 3 tapholes.

Diametre Measured at a Height of 1.3 Metres (4.3 feet) Above Soil Surface	Equivalent Circumference	Maximum Number of Tapholes
Less than 20 cm	Less than 63 cm	0
From 20 to 40 cm	From 63 to 125 cm	1
From 40 to 60 cm	From 126 to 188cm	2
Up to 60 cm	Up to 189 cm	3

7.2.3 Depth and Diametre of Tapholes

The depth of tapholes shall be no more than 4 cm, not counting the bark, or 6 cm, if the measurement is made from the surface of the bark. Taphole diametres shall not be greater than 11 mm.

When a tree is sick, has been attacked, is decaying or when its tapholes are healing badly, taphole standards shall then be stricter. The number of taps per tree should then be reduced to 2 when standards allow 3, and to 1 when they allow 2. It is thus prohibited to make tapholes when the C.H.D. is less than 25 cm ($\sim 9^{7/8}$ ""). If the trees in the sugar bush are largely affected, the regular standards for tapping apply, but spouts of reduced diameter can be used or operators can choose not to tap trees.

7.2.4 Disinfection of Tapholes and Tapping Equipment

The use of any type of germicide in tapholes, and on tapping equipment including paraformaldehyde pellets or denatured alcohol (a mixture of ethanol and ethyl acetate), is prohibited. If it is absolutely necessary to use a disinfectant during tapping, only food grade ethyl alcohol, applied by sprinkling it on spouts and in tapholes, may be authorized.

7.2.5 Overtapping and Spout Removing

Double tapping – the practice of retapping a previously tapped tree during the same season – is prohibited. Spouts shall be removed from the trees no later than 60 days following the year's final sap flow in order to allow the trees to heal.

Renewing the tap, i.e., retapping the same hole during the production season is allowed if the taphole diameter is not changed.

The tapping of maple trees at any other time than the sugar bush operation period (maple syrup season) is forbidden.

7.3 Collection and Storage of Maple Sap

7.3.1 General Principles

The equipment and techniques permitted by these standards are intended to provide processed products of the highest quality possible. Equipment shall be in good condition and be used according to manufacturer's instructions. Standards that apply to storage tanks also apply to tanks used to transport collected sap all the way to the evaporator.

7.3.2 Spouts (Spiles)

Only the use of spouts made from food-grade materials is permitted.

7.3.3 Vacuum Collection Systems

All parts of the collection system that might come in contact with the sap shall be made with materials suitable for use in the manufacture of a food product. Pumps shall be well maintained and their used oil shall be disposed of in a manner that causes no danger to the environment.

7.3.4 Storage Tanks

All equipment that comes in contact with sap or its concentrates and filtrates, such as storage tanks, connections, and transfer systems, shall be made with food grade materials. This also applies to paint used to cover them, if applicable.

All tanks shall be made of food grade fiberglass or plastic, and metal covered with food grade coating or with stainless steel. They shall be either TIG welded (metal on metal) or soldered using

tin-silver solder. Stainless steel tanks with welds made of tin-lead are tolerated until they are replaced.

7.3.5 Bucket Collection Systems

Pails or buckets may be made of aluminum or plastic, but not galvanized steel. A lid shall be used to cover buckets. The same standards applying to storage tanks apply to reservoirs used to transport the collected sap all the way to the evaporator.

7.4 Conversion of Sap to Syrup

7.4.1 General Principles

Sap tends to take on the odors of anything it comes into contact with during its conversion to syrup. Therefore, care should be taken to avoid denaturing the product at any point in the operation. For this reason the use of any technology likely to alter the intrinsic qualities of the product is prohibited.

7.4.2 Sap Filtration

Sap shall be filtered prior to conversion to syrup. This filtration shall not take away the sap's inherent qualities.

7.4.3 Sap Sterilization

Sterilization of sap prior to its conversion to syrup is prohibited, whether treating it with ultra-violet radiation or adding any type of product.

7.4.4 Reverse Osmosis Extraction and Membranes

The reverse osmosis technique of sap concentration is acceptable. Only membranes of the reverse osmosis and nano-filtration (ultra-osmosis) types are allowed. The technical specifications of membranes shall be available for inspection. In the off-season, osmosis membranes shall be stored in filtrate in a hermetically sealed container kept in a frost-free location. SMBS (sodium metabisulfite) may be added to the filtrate to prevent mould growth. In that case, the membrane shall be rinsed prior to its use the next spring, with a volume of water equal to the hourly capacity of the membrane (e.g.: 600 gallons of water for a 600 gallon/hour membrane). Off-site washing and storage of the membrane (e.g.: by the membrane supplier) shall be documented and this requires a personalized compliance guarantee in the name of the maple producer, signed by an outside party that provides this service, indicating the products used to wash and store membranes.

7.4.5 Evaporators

Evaporator pans shall be made of stainless steel. They shall be either TIG welded or soldered using tin-silver solder.

Pans made of galvanized steel, copper, or aluminum and tin-plated steel (English tin) and those made of stainless steel with tin-lead welds are not allowed.

Fuels allowed include wood and heating oil. Used oil may be used as a principal or auxiliary fuel for the evaporator if the enterprise has the necessary permits for this type of use. The environment and air quality in the evaporation room shall be monitored. Also the use of forced draft systems (aerators) is prohibited.

7.4.6 Defoaming Agents

The only defoaming agents or (foaming inhibitors) permitted are Pennsylvania maple wood (*Acer pennsylvanicum*, also known as striped maple or moosewood) and all certified organic vegetable oils except those made from soy, peanuts, sesame seeds or nuts because they can cause an allergic reaction.

7.4.7 Syrup Filtration

Silica powder, clay dust and diatomaceous earth are acceptable for use in the filter presses used to filter the finished syrup.

7.4.8 Temporary Containers

The maple syrup not intended for immediate consumption shall be stored in containers made of food grade materials that do not alter the chemical composition or quality of the syrup. Authorized containers are barrels made of stainless steel, fiberglass, food-grade plastic or metal with a food grade coating inside.

Each barrel used shall bear the information required by Section 10.2.1 in this specification manual. The producer shall inscribe in a register information elements about each container as well as its date of filling.

7.4.9 Stock Inventory Status

Within a few months following the latest harvest, the operator must transmit data to the certification body's office pertaining to syrup amounts:

- Produced during the current year;
- Originating from former years and in storage;
- Sold directly to customers.

If any syrup stock is still unsold once the annual operations have ended, the operator must ensure that all necessary steps have been made to preserve the quality of its product during the storage period.

7.5 Cleaning of Syrup Production Equipment

Equipment used within the syrup making system shall be washed with potable water, during both cleaning and rinsing.

If a cleaning product must be employed, the operator shall always follow the manufacturer's instructions regarding the concentrations to be used for cleaning or disinfecting.

Although certain cleaners do not require a rinsing stage, surfaces and pipelines shall *always* be rinsed thoroughly following the cleaning operation, thus avoiding the presence of any residues in food products.

7.5.1 Maple Sap Collection System, Pipelines and Tanks

When equipments subject to cleaning in the course of the production season also require cleansing or disinfecting, the only products that can be used to perform it are:

- sodium hypochlorite followed by rinsing with potable water or filtrate for all equipment except the pipelines.

Cleaning of the collection system, pipelines and tanks shall take place before and after each production season.

When they need to be cleansed or disinfected in addition to washing, products permitted to perform it are:

- sodium hypochlorite, isopropyl alcohol (for tubing only) or fermented sap for all equipment followed by rinsing with potable water, filtrate or fermented sap.

All other products are prohibited, including those with a phosphoric acid base.

7.5.2 Reverse Osmosis Unit Membrane

The reverse osmosis unit and membranes shall be cleaned using filtrate, according to the time and temperature recommended by the unit's manufacturer. If a Pure Water Permeability "PWP" test taken at end of season indicates that the membrane's controlled efficiency is less than 85% of the controlled efficiency at the end of the season, caustic soda (NaOH) may be used to clean it.

Following washing with NaOH, the volume of clean water used to rinse the unit shall be greater than or equal to 40 times the dead (residual) volume of the unit, meaning the total volume of the unit and its components once drained. The daily efficiency readings and calculations shall be recorded in a logbook. The membrane flushing water must be disposed of in a manner that causes no harm to the environment. Off-season treatment of membranes with citric acid is permitted.

7.5.3 Evaporators

Evaporators may be washed, with potable water, at any time. Vinegar (acetic acid) or fermented sap may be used at the end of the season.