

The Sustainable Sugarbush

Conserving Ohio's Sweetest Gift



Maple Sugaring in Ohio

History of Sugaring in Ohio

Ohio ranks between fourth and fifth annually among the top twelve maple product producing states in the country with approximately nine hundred operations producing between seventy-five thousand gallons and one-hundred eighteen thousand gallons annually.



Approximately seventy percent of Ohio's annual maple production is packed in containers and sold at “farm gate,” craft shows, gift shops, and local farmers markets. The remainder is sold wholesale to retail packers. Some of the specialty items produced with maple syrup include maple tea, maple beef jerky, maple candy, and maple spread.

Ohio's demand for maple products currently exceeds annual production. This fact signals the available market open to yet more Ohio woodland owners who might choose to diversify in the direction of maple products. This booklet is designed to give individuals interested in the sugaring business, whether for profit or pleasure, background information about the use of sustainable practices in a sugarbush.



Sap Flow and Syrup Production

Sap flow from sugar maples is temperature dependent. A rise in temperature of the sapwood to above thirty two degrees Fahrenheit causes a buildup of positive pressure within the wood. When the internal pressure of the tree is greater than the atmospheric pressure, sap will begin to flow.

In late winter and early spring, maple producers tap trees, collect sap, and boil it down to produce maple syrup, or other products. Sap can be collected from any native maple species; however, sugar and black maples are the first choice for producers, followed by red and silver maples.

Pure maple syrup is made by boiling and concentrating the sap from maple trees. As it comes from the tree, maple sap is a clear liquid with a slightly sweet taste. The district amber color and flavor are derived as a result of processing.

Maple Facts

- It takes approximately 44 gallons of sap to make one gallon of maple syrup.
- Sugar maple trees are one of the longest lived trees in the northeast, capable of reaching an age of three hundred to four hundred years.
- It takes one gallon of maple syrup to produce eight pounds of maple candy or sugar.
- Usually a maple tree is at least 30 years old and 12 inches in diameter before it is tapped.
- A gallon of maple syrup weighs 11 pounds.
- The sugar content of sap averages 2.5 percent; sugar content of maple syrup is at least 66 percent.



Biodiversity in the Sugarbush

There are few forest products that are as sustainable as maple syrup as it is a renewable and one hundred percent natural product. There are even fewer agricultural operations that can maintain as much biodiversity as a well maintained sugarbush.

What is Biodiversity?

Biodiversity is defined as the variety of life, its processes, and its habitat. It is more than just the number of each species of plants and animals, as it includes how an ecosystem functions and the relationships that exist among all components of the ecosystem: air and water, soil, bacteria and fungi, insects, plants, and animals.

Benefits of a Biodiverse Sugarbush

Maple sugarbushes are working forests and functioning ecosystems that:

- Use carbon from the atmosphere to grow trees and store that carbon in wood thereby reducing global warming.
- Produce oxygen through the process of photosynthesis.
- If properly managed, produce virtually no erosion and promote soil formation and can decrease noise and air pollution.
- Provide summer roosting and nesting habitat for several bat species.
- Provide habitat for a variety of plants and animals.





Protecting Biodiversity

Management practices that help maintain biodiversity in the sugarbush include:

- Controlling invasive exotic plant species such as garlic mustard and buckthorn.
- Keeping deer populations under control through hunting or exclosure to allow regeneration of tree species and wild flowers which flourish on the forest floor.
- Allowing some large downed trees to remain in order to provide habitat for wildlife.
- Minimizing the use of pesticides and herbicides and following application instructions - more is not necessarily better.
- Protecting seasonally wet areas such as vernal pools.



A variety of plants and animals can be found in a biologically diverse sugarbush including the species featured above. From top to bottom: Red-backed salamander, Ovenbird, and Ill Scented Trillium.

Best Management Practices

Location of Access Roads and/or Trails

A well designed trail and/or road system will benefit a sugarbush operation in terms of ease and access to taps, and may serve as a logging road in the event that the sugarbush needs to be thinned. Using best management practices, also called BMPs, can help prevent soil loss by erosion and protect water quality. The following BMPs have been used in silviculture, agriculture, and construction for many years and can help maintain the overall environmental health of the sugarbush:

- Trails and roads should be installed along the topographical contour of the land in order to minimize erosion.
- Trails should not be installed in areas with slopes greater than 15 percent.
- Streams should be crossed only when no other option exists. All crossing should occur in a well defined channel and at a 90 degree angle. Portable bridges may be used to cross streams when applicable; otherwise, armor the stream bottom and protect the banks from collapsing using large stone or logs. Check with your local conservation agency, the U.S. Army Corps of Engineers, and the Ohio Environmental Protection Agency (EPA) before disturbing a stream as you may be required to obtain a permit.
- Trails and roads should be permanently stabilized with aggregate or vegetation after installation.
- Diversions should be used to keep water from running off of newly installed roadways and trails. These diversions may include silt fence, straw bales, ditches, or earthen berms.





- Avoid locating trails or roads in seasonally wet areas. These areas may be wetlands and may require permits from the U.S. Army Corps of Engineers or the Ohio EPA.

These simple forestry practices, and several others, have been compiled into Ohio State University Extension Bulletin 916 titled “BMPs for Erosion Control and Logging Practices in Ohio.” While the guidelines established in the bulletin are not mandatory, they are highly recommended for individuals concerned about maintaining the health of local watersheds and the sustainability of local sugarbush operations.

Individuals wishing to learn about additional management techniques and tapping guidelines to promote a sustainable sugarbush may reference the “North American Maple Syrup Producer’s Manual.”

Environmentally Friendly Practices for the Sugarbush

Maple producers can continue to improve the environment by incorporating some of the following practices into their sugarbush operation:

- Promoting water quality through the use of best management practices which minimize soil compaction and erosion.
- Gathering sap with tubing systems to minimize invasive activities in the sugarbush.
- Reducing carbon dioxide emissions with the use of bio-fuels such as soy-diesel. According to the University of Minnesota, “soybean bio-diesel produces 41 percent less greenhouse gas emission than fuel oil.”
- Utilizing 5/16th health spouts as smaller holes allow the tree to heal more quickly without loss of production.
- Reducing the amount of fuel and time needed to process maple syrup by utilizing technology such as reverse osmosis, which removes up to 75 percent of the water from the sap before boiling.

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The following resources were utilized in creating this booklet:

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