

WHEN DO YOU START TAPPING A MAPLE TREE?

It takes approximately forty years to grow a maple tree large enough to tap. You do not want to tap a maple tree less than fifteen inches in diameter.

Once the sugary sap begins to flow in the sapwood of the tree, it is time for tapping. At this moment, the sap is 97.5% water, 2.4% sugar and .1% minerals.

A number of factors can affect the sap's rate of flow, quantity and sugar content (which can vary from .5 to 10%). Other influences are tree species, height and diameter, tapping period, management, techniques employed and climatic conditions.

A hot and sunny summer with good rainfall promotes the formation of plentiful reserves of sap. A winter in which the ground is not frozen too deeply and is gradually warmed with the approach of spring contributes to a good flow. Spring weather has an even greater effect on sap production. Nights with temperatures at or below the freezing must be followed by days with thawing temperatures (up to 8 degrees C) so that sufficient pressure develops to make the sap flow.

Approximately forty gallons of sap will make a gallon of maple syrup. This depends on the sugar content of the sap. There is a chart elsewhere in this packet explaining about the sugar content in sap and how many gallons that would take to make a gallon of syrup. Production varies from year to year, with the weather playing an important role.

A 7/16-inch hole is drilled into the tree to a depth of about 1½ to 2 inches. Then a spile is lightly tapped into the hole. Onto this spile is hung a pail, sap bag holder or tubing is strung. The buckets should have covers on them to protect the sap from rain or dirt falling into the sap until gathering. The tubing carries the sap directly from the tree to the storage facility.

Maple Trivia --- Did You Know ????

There are three (3) grades of maple syrup

Light Amber -- used mainly for making cream or candy.

Medium Amber -- used mainly as table syrup, because of its delicate flavor.

Dark Amber -- used by people who prefer a stronger maple flavor.

All grades are table grade; it is just up to the preference of the person who is eating it.

Pure maple syrup is slightly sweeter than cane sugar.

It contains 40 calories per tbsp., equal to molasses; where there are 60 calories per tbsp. in corn syrup; 45 calories per tbsp. in honey. Sugar contains 54 calories per tbsp.

In cooking, substitute $\frac{3}{4}$ cup of syrup for each cup of sugar and reduce the liquid in the recipe by three (3) tablespoons.

Maple syrup contains 85% carbohydrates.

The maple season usually lasts about three to four weeks, if we are lucky. It may start in late February and goes into April. A rule of thumb use to be that the last week of March and the first two weeks of April was syrup season. Not so any more!

Warm, sunny days (above 40 degrees) and frosty nights (20 to 25 degrees) are ideal for maple sap flow.

It takes 30 - 50 gallons of sap to make 1 gallon of maple syrup.

Each tap will yield an average of ten (10) gallons of sap per season, which equals about one (1) quart of syrup. This depends on the sugar content of the sap.

One gallon of maple syrup is 66% Brix or 11 pounds per gallon.

Tapping does not damage the maple tree. Only about ten percent of the sap from a tree is collected each year.

**NUMBER OF GALLONS OF SAP NEEDED
TO MAKE ONE GALLON
OF PURE MAPLE SYRUP**

(Jones's Rule of 86)

SUGAR TEST	GALLONS OF SAP	GALLONS OF MAPLE 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

MAPLE SYRUP HISTORY

Early explorers and settlers in North America learned to make maple syrup and sugar from the Indians, who celebrated the "maple moon" or "sugar moon" as the return of spring. Sugar making was a gala affair among the Indians and everyone took part -- even the Indian braves helped collect the sap and stir the sugar. Many Indian tribes used maple syrup and sugar as their chief seasoning in cooking.

The Northeastern colonists counted on "Indian Molasses" as an everyday food. Until 1860, maple sugar cost less than white sugar. Then prices changed rapidly, and by 1875 maple syrup had become a luxury. For many years, one gallon of maple syrup was worth a day's wages for one man.

The birch bark containers, moose skin vats, and hollowed-out logs in which the Indians gathered, stored, and boiled the sap gave way to wooden buckets and iron or copper kettles in colonial days. In the modern twentieth-century, syrup producers collect the sap in plastic bags, pails, and pipelines via plastic tubing to the sugar house. Here it goes from the storage tanks to an evaporator and the finished syrup is filtered before it is marketed.

Wisconsin ranks between third and fourth in the production of maple products in the U.S., with an annual production of 100,000 + gallons. Perhaps no more than 10-15% of the tapable trees are presently utilized for syrup making, indicating the potential of the industry.

HOW MAPLE PRODUCTS ARE MADE

As it comes from the tree, maple sap is composed of water, sugar, mineral salts, and a trace of a substance which gives maple syrup its unique flavor. This flavor varies according to type of maple trees and the region where it grows. The sap is tasteless (a little sweet to some) and colorless.

Many factors affect the flow of sap and determine the quality of the finished product. Included are the type, age, health, and size of the tree and the soil condition. A good tree might give up to 40 gallons of sap in one season. The average amount of syrup from one tap is one quart + a season. The weather, of both the preceding summer and the sugaring season itself, also affect sap flow. Frosty nights and warm days (45 - 50 degrees F) provide ideal sap-flowing weather.

Metal buckets, plastic buckets, plastic bags, or tubing are used to collect the sap as it flows from the trees. It is important that the sap be processed as quickly as possible for the highest quality maple syrup to be made.

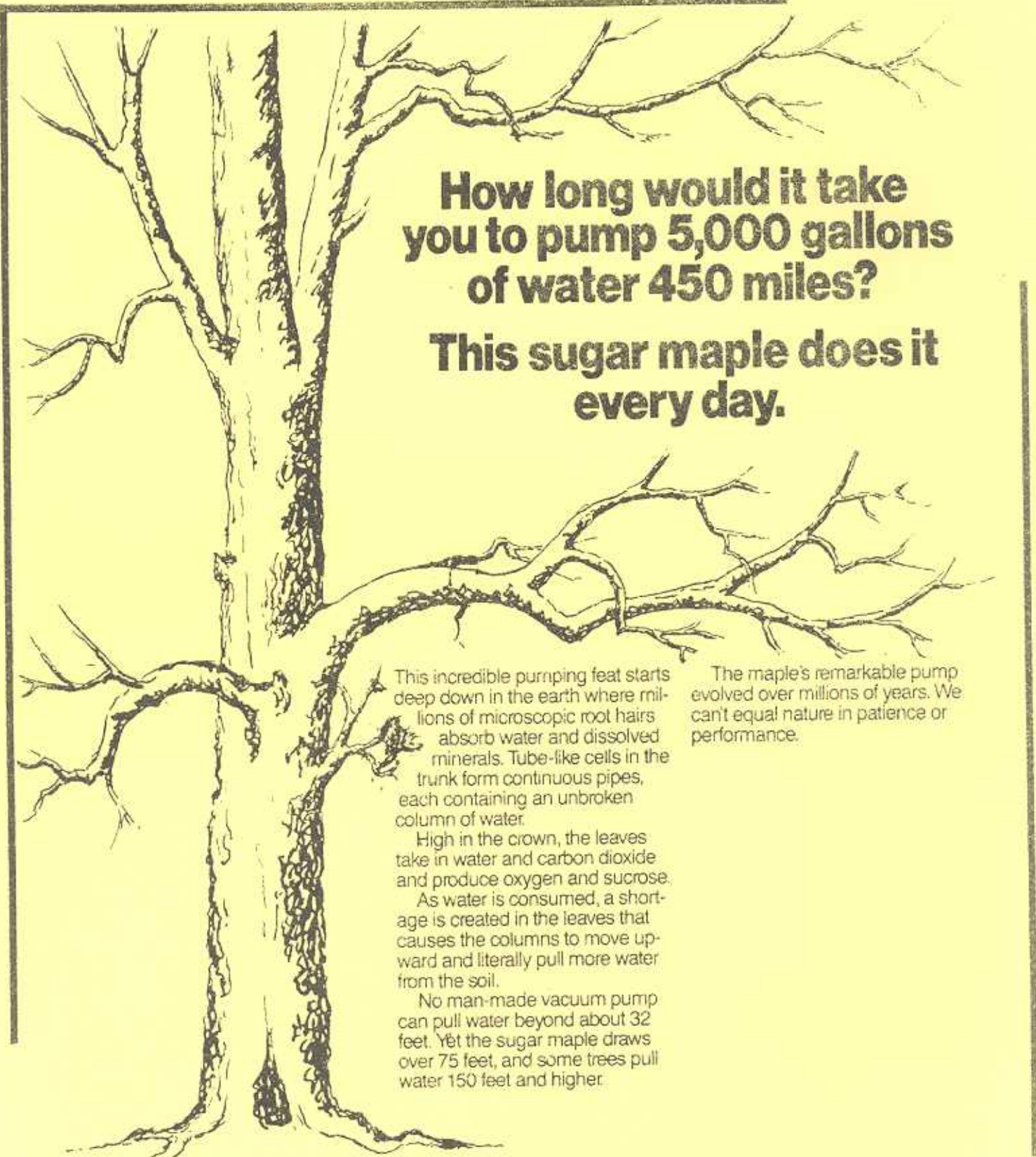
SAP TO MAPLE SYRUP HOW THIS GOT STARTED

For decades scientists wondered how maple sap could move from the roots to the top of a maple tree, which often reaches a height of 20 meters. The maple tree must have a pumping mechanism that can pump the sap to such great heights. (See sheet elsewhere in this packet on "How long would it take you to pump 5,000 gallons of water 450 miles? This sugar maple does it every day.)

Spring brings us the season of sap flow. During this time, sap flows from tree roots into trunks of trees, breathing life back into the tree. This magic flow inside the tree is triggered by cold nights below freezing and warmer days with temperatures pushing above the freezing mark into the 40's.

Indian tribes waited for this time of year for centuries. It meant the harvest of an important and tasty resource. They would move their people to the sugar camp to harvest the sap. First, they tapped the tree with a spout made from a reed or a hollow twig. Then, they collected the dripping sap in a trough made from hollowed out branches. Finally, they collected the sap in containers and heated it over an open fire until it thickened into syrup or turned to sugar. The Indians used the sap as a tasty sweet drink, syrup and candy. Some made maple sugar and used the syrup as a seasoning much like we use salt. Other Indian tribes also used maple syrup as a trade item with the early settlers. Eventually, the settlers were taught the traditional ways of making syrup and began producing their own supply.

Have you ever heard of a "sugar bush?" This means the area where maple trees grow and when large enough are tapped. Sugar maples (hard maple) have the greatest amount of sugar in the sap to make syrup out of, but you can also tap red maples (soft maple). An average maple tree will produce about 20 gallons of sap in the spring, which only amounts to 2 quarts of maple syrup. Most of the sap content is made up of water. The sap only contains 1 – 5% sugar, usually about 2% being the average.



**How long would it take
you to pump 5,000 gallons
of water 450 miles?**

**This sugar maple does it
every day.**

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, 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 about 32 feet. Yet the sugar maple draws over 75 feet, and some trees pull water 150 feet and higher.

The maple's remarkable pump evolved over millions of years. We can't equal nature in patience or performance.