



## TAPPING TIPS

### The basics of identifying trees and setting taps

Whether you anticipate tapping in your backyard with a half dozen trees or you wish to begin a bit more aggressively with several hundred taps, the core techniques and methods are the same. This guide will introduce you to basic maple tree identification and then

prepare you for the basics of tree tapping, time of tapping and the logistics of getting started in the woods.

First you will need to be able to identify a maple tree from a walnut, oak, beech and others at a time of year when distinguishing one trunk from another is not always easy. If you have a chance to enroll in a tree identification course (check with your local extension office, or a woodland owners' group) it would make this job easier but there are also some tricks to



ease the ID of your potential sap supply.

Easiest of course is to learn your trees when they have their summer foliage and then either tag them or map them for easy ID in late January / early February. Branch arrangement on the newest growth is perhaps the next best way to select maple from other species. In the maple

sugaring region (northeastern US and Eastern Canada we are apt to find only a handful of tree species bearing opposite leaf and branch arrangements, while most northern hardwood tree species bear alternate leaf and branch arrangements.

Simply, branches (leaves and buds) are arranged on a stem by one of three different arrangements (phyllotaxy). If a single bud or leaf arises along the stem the arrangement is deemed alternate. If there are two branches (leaves and buds) arising from a common point on a stem, the arrangement is termed opposite, which is typical of all maples. The third type of branching is called whorled and reveals three or more branches at each node; an arrangement seen in most conifers (evergreens).

An easy way to remember this for our field work is to use the word MADHorse, which represents the four most common opposite branched trees in the

sugaring region – Maple, Ash, Dogwood, and Horse chestnut / Ohio buckeye. Now let's make this even easier – Dogwood is a shrub that grows 5-8 ft. tall with red or gray stems about the size of your finger. Horse chestnut and buckeyes are not as common in all but the southern portion

of the maple sugaring range but their large (1-1.5 inch long) buds and courser branch structure are dead giveaways that it is not a maple. Ash also has very large primary branches, deep purple or brownish buds and a much less dense canopy of fine branches than maple. Additionally, if you are scouting in the summer months, ash will bear compound leaves, horse chestnut / buckeye bear

palmately compound leaves, and unless you are tapping the compound leaf box elder (which is a maple – *Acer negundo*) all tappable maple species will bear simple pointed lobed leaves like the flag of Canada.

To recap – summer leaves



The best way to identify maple trees for tapping is by their leaves. The distinctive shape of the sugar maple is easy to spot.

(even if you have to look at them through binoculars) and then winter branch arrangement are the best diagnostics for selecting sugar, black, and silver maples. The least accurate and probably most difficult is determination by tree bark characteristics. Even veteran sugar makers get it wrong once in a while and end up tapping a white oak, hickory, cucumber magnolia or basswood tree, (though doing so with telephone poles and spruce trees will result in the greatest embarrassment!).

Genetics, elevation, soil conditions, drainage (both air and moisture), stand stocking density, aspect (North, South, East, West), tree health and vigor, edge effects and woodlot roads all influence bark and growth characteristics. Generally, we refer to young maples as having tight, smooth bark. These will have little rough furrowing on their outer surface and may stay tight barked until age 25-40 years old. More mature maples will bear a furrowed outer bark with fissures up to 15" long and depending on the diameter of the tree, these furrows may be up to 1 -1.5" wide and nearly 3/4" deep. Furrowing is highly variable and presents differently between Maple species. Silver maple has a mature bark that is highly striated. Red maple appears like a potato chip pattern. Perhaps the best way for new sugar makers to learn their

trees is to help an existing local producer tap their trees. After looking at 1000+ trees up close as you tap them you will get a much better sense of what you are looking for.

Once you have your trees identified, and equipment purchased to collect sap (look for an upcoming insert in the Digest to cover the different sap collection options in detail) you need to watch the weather. In the past, sugarmakers tended to have a set date for tapping in the spring, and this worked well until the weather became more variable. As maple syrup production has modernized and became more of a standalone business, producers attempt to maximize production and are much more in tune with the weather forecasts. When they start to see the warm days and cold nights in January-March (depending on if you are in the southern or northern maple region) they head to the woods.

Timing of tapping also depends on the number of taps you need to install, number of people helping you tap, and what methods of sap collection you are using. Time of tapping is a mystery nearly as confusing as identification of trees on bark characteristics alone. Tap holes generally remain open and productive for up to 6 to 8 weeks depending upon weather conditions – longer for tubing systems, and shorter for taps hung with buckets. If you tap too early,





Identifying sugar maples by their bark alone can be very challenging. Variations occur based on tree age, health, aspect, and other factors.



you run the chance of having the tap holes close before the season is over and likewise if you wait too long to tap you run the risk of missing several early season sap runs.

When preparing to tap, things to consider generally include: calendar date, past climatic history, depth of snow in the woods, labor availability, type of tapping (bucket, food grade tubing, gravity or vacuum extraction), and capacity quantity of sap storage. Remember, the earlier one taps the earlier one needs to be ready to handle the sap.

Rule number one when making syrup is to process the sap as quickly as possible to insure

quality of the finished product. This means that during the early season you will probably need to have some way of keeping your sap from freezing in the storage and supply lines. If you are using buckets it is important to have those containers empty on nights where the temperatures plunge into the teens or below zero. Every sugarmaker has a pile of buckets with seams or bottoms broken out caused by freeze damage. Tubing systems will not usually break (although fittings will occasionally separate) but will spend a long time thawing if left full of sap. To avoid freezing, well-constructed tubing systems should not have sags, upslope runs or long lines.



The bark of the silver maple can have significant variations as well.



Depth of snow is an important consideration from several points of view. Usually, the deeper the snow the more moderate the frost in the ground will be. Trees on frozen ground usually do not run well, but some frost in the forest floor helps to modify high temperatures periods during the season (refrigeration effect). On the other hand, deep snow means that the operator will need to work wearing snowshoes to make progress in the woods. Buried sap lines or buckets generally don't run sap and some areas of sugarbushes prone to drifting may hold deep snow until well after

the sap season ends. Tapping at waist height on a six foot drift of snow leaves the bucket at the end of the season 8½ feet above the ground! If your lines or buckets are beneath the snow, you have no way to check them for leaks or breaks until after it all melts, and while it's melting is generally when the sap is running. Lastly, deep snow becomes a costly and time consuming deterrent when you need to plow roads into your sugarbush for gathering.

The calendar and daily temperature dictates both when and how you tap your trees. Outside temperature and especially the



Tapped carefully, trees heal quickly and can yield sap for decades. Improper tapping, such as driving in taps too hard, particularly into a frozen tree, can split the tree and cause long-term damage.

tree trunk temperatures are going to influence your tapping technique. Producers need to exercise extreme care tapping into frozen wood. Not all drill bits are created equal and there are special bits designed for maple production. These drill bits are specific to maple in that they help the spile seat properly, and when kept very sharp and clean they insure a cleanly cut taphole. Frayed or rough tapholes along with out of round tapholes all work to reduce quantity and quality of sap.

Older taps were 7/16" in diameter and have largely been replaced by a 5/16" spile. Most producers use a 5/16" or 19/64" drill bit to make the hole. Cordless electric drills have greatly increased tapping efficiency and speed but caution should be used so the drill does not heat up and cauterize the tap hole. Maple drill bits are designed for slower speed drilling resulting in a cooler bit.

Once you have located where to drill on the tree you need to angle the bit slightly upwards to promote sap to run out. Tap holes should not exceed two inches in depth, which will cut across 10-15

years of growth in the sap wood. A new taphole is drilled each year because a trees' response to being wounded is to first dry out the wound, second to compartmentalize the damage, and third to grow new wood tissues over the wound to seal it off prior to decay setting in. Because of the tree's compartmentalization reaction, new tap holes should be drilled at least three inches to the right or left of a past taphole and two to

three inches up from an old taphole to preserve the structural strength of the tree. This stair step approach to tapping maximizes both tree health and sap production.



Use a drill bit meant for tapping so that your tap holes are clean and your spiles will seat properly.

If you are tapping into frozen wood, extreme care must be exercised when driving the spile. Regardless of size (1/4", 5/16", or 7/16") or material (metal or plastic) you must gently tap the spile in the tree. Do not use a large hammer, and do listen for a sound change when the hammer hits the spile. When the spile seats and seals itself with the tree there will be a slight sound change. Hitting it again after the sound change will create a vertical crack above and below

the taphole, especially if the tree is frozen. Sap will leak from the cracks, vacuum will be lost from the system, and the taphole will take longer to seal over, leaving a much larger scar. Realistically, your taphole should close and seal over within one to two growing seasons. If tapholes are taking longer to seal over, you need to re-visit your sugarbush management (stocking levels, crown growth, and taps per tree).

So now you have basic tree ID skills and are somewhat prepared to venture forth into your woodlot and find your maple trees. You understand the tree should be at least 12 inches in diameter and will be tapped from 2-5' above the ground. Most producers now use only one tap per tree unless the tree is extremely large (2' diameter or greater). Set the spile, hang the bucket, place the cover and wait for the sap to run. Future papers and videos will address tubing, buckets and various collection systems. As

always, you are encouraged to consult fellow sugarmakers, your Extension specialists, or regional maple producers associations for assistance or information relating to all aspects of maple syrup production.



Metal numbers on the stem, a lack of bark or branches, or wires at the top of the trunk are an indication of little to no sap yield. Do not tap.

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