

MAPLE STORY

The Sugar Maple (*Acer saccharum*) is a species of deciduous tree found in Minnesota. Maples can be identified by their "opposite" branching pattern (buds and twigs attach to a stem directly across from each other; see photos in the Maples Near You worksheet). Sugar Maples are the most common tree to be tapped for sap because of the high sugar content of their sap (2-3%).

The physiology of the maple tree in combination with the weather during the spring allow us to tap maple trees for sap. During the summer, through photosynthesis, the tree produces carbohydrates which are stored mainly as a starch. In the fall, as daylight decreases and temperatures drop, leaves fall off the trees and sap moves down the phloem for storage in the roots. In winter, some of the carbohydrates are converted to sucrose and dissolved into the sap. When spring arrives the sap moves through the tree to provide energy for the developing leaf buds. The best flows occur with nights below freezing and days in the 40's. This produces a positive tree sap pressure (about 20 psi) and as long as this is greater than the atmospheric pressure, sap will flow. A tree that is healthy and has a large crown will produce more sap.

Native Americans were the first known people to tap trees. Their survival depended on intimate knowledge of the plants and animals that they lived among. Originally a v-shaped gash in conjunction with some sort of stick was used to collect the sap in a vessel below. Immigrating Europeans learned the process from the Native Americans. Although the technology has advanced the underlying principles of maple sugaring have remained the same; gather and concentrate. The changes have mainly occurred with the materials used. The first taps were made of hollowed out sticks, then metals and plastics were used. Collecting buckets followed the same path; birch bark- wood- metal- plastic tubing.

The first step to tapping a maple tree is to drill a 1.5-2 inch deep hole in the tree. Then, a spile is pounded into hole to allow the sap to flow out and down into the collection vessel (usually a bucket or plastic bag). A typical maple tree produces 5-15 gallons of sap each spring. Even the most sugary sap is mostly water (it's about 98% water and 2% sugar). In order to make 1 gallon of syrup you need to boil 40 gallons of sap. Boiling the sap removes water, leaving behind a more concentrated, sweet syrup. At Wolf Ridge, we typically tap about 40 maple trees and we boil our collected sap on a wood stove to make maple syrup.