

## Planning for Sap and Tree ID 4<sup>th</sup> & 5<sup>th</sup> grade, 45-60 minute lesson

**Objective:** Students will create a plan in preparation for collecting sap and making syrup. Students will check the trees previously identified to ensure they are maples and are acceptable for tapping.

### Materials:

- Maple tree id guides (created in lesson 1)
- Sap planning worksheet
- Rulers or yard sticks

**Background Information:** When sap is collected from the trees it will drip into the buckets that are attached to the taps, however sap cannot live in these buckets for a very long time for multiple reasons. The main reason is the buckets will overflow and sap will be lost. Furthermore, when sap sits out and is exposed to the environment it is also exposed to lots of microbes. The presence of microbes is inevitable, however it is best to avoid additional exposure to microbes when possible because they have the ability to change the flavor of syrup and eat away at all of the sugar that is present in sap. A crucial part of your plan for sap collecting is to decide where to store the sap once it has been collected and before it is time to boil it.

Generally speaking, sap should be boiled as soon as possible after collection. If it is necessary to store sap for a long period of time the best options are to freeze it or store it in an airtight, food grade container somewhere cool, below 38°F. Sap that is not kept frozen should be used within 7 days of collection.

Other things that should be included in a sap collection and syrup making plan are:

- How much wood will you need for the wood fired evaporator? (See pg. 26 in *Maple Syrup: An Introduction to the Science of a Forest Treasure*)
- Where will the wood come from?
- How do you plan to bottle the finished syrup?
- What are some ways the class plans to use the syrup?

\*This information is only pertinent if you are measuring tree diameter\*

When choosing maples trees to tap producers will measure the tree's diameter and they will only tap trees that have a diameter at breast height, DBH, of 10in or more. Diameter at breast height, DBH, is the measurement taken by maple producers and foresters all over the world, the DBH of a tree is a determining factor in the tree's value for maple production and timbering. Generally, a maple tree must have a DBH of at least 10in to be worth tapping, otherwise the tree is too small to produce much sap and it is worth waiting for the tree to grow. Tapping a tree smaller than 10in DBH will not harm the tree excessively. Trees that are greater than 18in DBH can be double tapped, 2 taps can be put on opposite sides of the tree.

DBH is measured using a Biltmore stick, a yard stick with specific tree and log information on it, or a regular yard stick.

-The Biltmore stick should be held arm's length, approx. 25", away from the tree and approximately 4.5ft above the ground.

-Using your left eye, line the end of the Biltmore stick up with the edge of the tree and look across to the right side to see where the edge of the tree lines up on the Biltmore stick.

-That number is the DBH.

**Introduction/Hook (3-5 minutes):** Today we are doing the final steps in preparing to tap maple trees and collect sap! We must make sure we are prepared for this process to begin because once the sap starts flowing it likely won't stop for weeks!

-What are some things we need to think about to prepare for collecting sap?

**Activity:** Working in groups have students complete the 'Sap Plan' worksheet. The students may need some help figuring out some of the information on the worksheet.

-Once all groups have completed the worksheet come together as a group and make a master plan for sap collection.

-Have students work together to gather, organize and prepare all the materials needed for sap collection. Allow students to take ownership of sap collection and tree tapping by having them do all, or as much as possible, of the prep work.

Have students find their maple tree id guides, created during lesson 1, and go outside.

-If trees were not identified in lesson 1, use this time to identify all the maple trees the class plans on tapping.

-If trees were identified in lesson 1, use this time to double check that they are all actually maple trees and have students find the DBH of each tree.

-Discuss why measuring the DBH of a tree may be something important for maple producers to know.

**Sources:**

*Maple Syrup: An Introduction to the Science of a Forest Treasure*, by Mike Rechlin

<https://tapmytrees.com/collect-sap-make-syrup/>

<https://forestry.usu.edu/rural-forests/forest-management/measuring-stick>