

***Tapping into***

# **Maple Tradition**

# PROJECT BENEFITS

- ▶ **Featuring a commodity which teachers are familiar with sparks their interest in aged**
- ▶ **Format of program allows for teachers to pick and choose which components fit best into their classroom**
- ▶ **An opportunity to establish a relationship with a commodity group**

# Three components to the project:

- ▶ Video focusing on the educational aspects of maple production
- ▶ General poster for classroom and sugarhouse display
- ▶ A variety of curriculum for K-12 emphasizing differing core academic subjects

ALL RESOURCES ARE AVAILABLE AT  
[www.agclassroom.org/nh/resources/maple](http://www.agclassroom.org/nh/resources/maple)

# VIDEO

- ▶ **We researched content and wrote a script and/or outline of points to be covered**
- ▶ **Produced by the New Hampshire Farm Bureau**
- ▶ **“Hosted” by an FFA State Officer**
- ▶ **Filmed at two local sugarhouses**

- ▶ Primary Video touches on a number of academic concepts involved in the maple sugaring process
- ▶ Several short supplementary videos focusing on specific areas





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## Evaporation:

Applying high, even heat to the sap causes it to boil – water is removed and the sugar content is concentrated from around 2% to more than 66% ultimately producing maple syrup. Several chemical reactions are also involved.

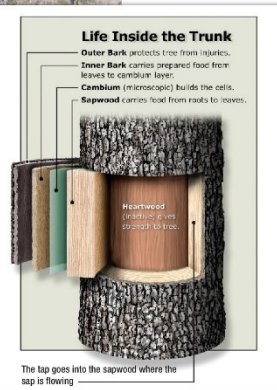


When the temperature is **below freezing**, the pressure in the tree is reduced creating a vacuum or suction.

When the temperature is **above freezing**, the pressure in the tree increases creating positive pressure, which pushes sap out of any hole in the tree. A healthy tree has extra sap which flows into the bucket.



Sap flows out holes in the tree when there are changes to internal pressure.



**Xylem:** moves water and dissolved nutrients from the roots to the top of the tree – as water evaporates from the tree, it creates negative pressure inside the xylem.

**Phloem:** carries products of photosynthesis, especially glucose, which absorbs water from the nearby xylem making a sugary sap to transport the sugar.

## Grading:

Maple syrup is graded or categorized based on the flavor and how much light passes through (translucence). Variations are due to weather, soil, climate, point in season, boiling and more. The quality of all grades is the same.

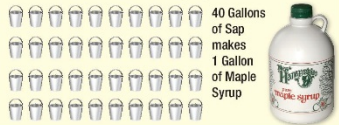


**Golden:** Generally from the first sap of the season when days are warmer and nights are colder.

**Amber:** Usually made mid-season when there have been slight changes to the sugar content of the sap.

**Dark:** Made later in the season when the sugar content of the sap has dropped and it takes more to make syrup.

**Very Dark:** Typically made from sap at the end of the season. Natural chemical reactions help to darken the color.



# POSTER

# LESSONS & ACTIVITIES

## LESSONS & ACTIVITIES

TITLE (link)	LEVEL	SUBJECT	DESCRIPTION	RELATED RESOURCES
<a href="#">Background Information</a>	All		General background information applicable to most lessons.	
<a href="#">Be A Sugar Maker</a>	K-2	Science Cycles	Role-play the sugar making process with the option to expand into the water cycle. Tapping for sap is a wonderful accompaniment to this activity.	<a href="#">Sugaring Tool Cards</a> <a href="#">Tapping for Sap</a> <a href="#">Terrific Trees</a>
<a href="#">Find the Sugar Maple</a>	3 <sup>rd</sup> -6 <sup>th</sup>	Science, Language Arts	Learn about how to identify the different kinds of maple trees native to NH. Then make a flipbook with pictures or photos of the different trees and explain their own tips for identifying trees.	
<a href="#">Nature's Factory At Work</a>	3 <sup>rd</sup> -6 <sup>th</sup>	Science	Students will learn about the layers of a tree trunk, discover the process of photosynthesis and learn about the water cycle. Also explore solutions and evaporation.	<a href="#">Sugar Maple Inquiry Cards</a> <a href="#">NHIMPA Photosynthesis poster</a> <a href="#">Tree Rings (math)</a>
Pancakes	1 <sup>st</sup> - 2 <sup>nd</sup> 3 <sup>rd</sup> -5 <sup>th</sup>	Science	Describe physical properties of materials and observe physical and chemical changes as they learn about the ingredients in pancakes and how maple syrup is harvested from trees.	
<a href="#">Tapping Into Maple Tradition</a>	2 <sup>nd</sup> -6 <sup>th</sup>	Language Arts, Science, Math	Oral and written communication, mathematical representation plus physical and conceptual models to describe and explain scientific concepts and ideas. Use inquiry strategies to investigate and understand the natural world. Younger students will learn to use the process approach to writing coherently and using appropriate conventions.	<a href="#">Sugar Maple Inquiry Cards</a>
<a href="#">Where's The Maple?</a>	4 <sup>th</sup> - 5 <sup>th</sup>	Social Studies (GIS mapping), LA	Engage students in the process of maple sugaring by reading Maple Syrup Season and completing a chronology activity. Students can then be guided through an ArcGIS Online activity showing them why NH has business based on maple sugar and allows them to map and explore area sugarhouses.	
<a href="#">Looking Back, Thinking Forward</a>	3 <sup>rd</sup> -6 <sup>th</sup>	Social Studies	Learn about the maple sugaring process - the equipment and its changes over time, climate, and technology. How has it changed through history and what might it look like in the future?	<a href="#">Maple History Short Video</a> <a href="#">Legends</a> <a href="#">Make A Birch Bark Container</a> <a href="#">A Day At Sugar Camp</a> <a href="#">Sugar Maple Inquiry Cards</a>
<a href="#">Maple Temperatures</a>		Math	Explore different temperatures involved with maple sugaring. Learn about sling a thermometer to take temperature and use fractions to convert from Fahrenheit to Celsius and back.	<a href="#">Maple Weather - Will It Run Today?</a> <a href="#">Sap In The Sugar Maple video</a>





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