



4-H Foundations of Maple Sugaring Enterprise: From Sap, to Syrup, to Sales 2025 Instructional Content Guide for Volunteers and Club Leaders

Unit 1: Maple Woods Work

Goals:

1. Provide educational experiences related to maple forests and collecting maple sap for syrup production.
2. Provide experiences rooted in positive youth development for Maine 4-H youth. (See PYD Planning Guide on the last page.)
3. Facilitate the learning and practice of entrepreneurial and workforce skills related to maple forest agricultural occupations in northern New England.

Learning Objectives *The items with an asterisk are assessed for the Level 1 Digital Badge	Activities & Resources (Instruction is virtual or remote unless noted as an in-person activity) Three Types of Selected Student Resources (SSR) Orange- Activity or Worksheet Black- Informational Resource Purple- Lesson Plan led by an Adult	Citations of Sources and References
*Identify original practices for maple sugaring in Maine maple forests by native americans and colonists	SSR 1A - Map of Our Tribal Nations	Carapella, A. (2013). (SSR 1A) Perkins, et al. (2022). pp. 2-1 to 2-14 Vermont Evaporator Company (April 10, 2020). Vermont Evaporator Company (2023). Wolfe, L.M. (2019).
Compare and contrast characteristics of red and sugar maple trees	SSR 1B - Tree Identification Activity	New York State Maple Producers Association (2017). Document file pp. 31-

	SSR 1C - Maple Tree Identification Chart	32 (SSR 1B) Maine Forest Service (2008). (SSR 1C)
*Identify unique features of red maple, sugar maple, Norway maple, oak, ash, birch and beech trees	<i>In-person activity at host site</i>	<i>Host Guide: Week 1-Woods Work, Item #1</i> New York State Maple Producers Association (2017). pp.16 (SSR 1B) Maine Forest Service (2008). (SSR 1C)
*Recognize and select the essential food grade equipment for tapping trees	Activity by UMaine Extension Staff	Cornell Maple Program (2020). Vacuum, pp. 57 Perkins, et al. (2022). pp. 6-12 to 6-14 & 14-4 to 14-8 Wolfe, L.M. (2019). pp. 43-44
Define Diameter at Breast Height (DBH) in relation to tapping maple trees according to the North American Maple Syrup Producers Council	<i>In-person activity at host site</i>	<i>Host Guide: Week 1-Woods Work, Item #2 & #3</i> Cornell Maple Program (2020). pp.9-10 Perkins, et al. (2022). pp. 6-9 & G-3 Wolfe, L.M. (2019). pp. 25-27 & 97
*Identify essential components of sap collection systems with buckets and	SSR 1D – Tubing Layout Design	Cornell Maple Program (2020). pp.30-33

tubing		Perkins, et al. (2022). pp. 6-31 to 6-52 NH Agriculture in the Classroom (2023). (SSR 1D)
Describe the sugar content of maple sap	SSR 1E – How Sweet is Maple Sap	New York Agriculture in the Classroom (nd) (SSR 1E)
Recognize how to measure the sugar content of maple sap	Activity by UMaine Extension Staff	Cornell Maple Program (2020). pp.101
*Identify the weather conditions related to the flow of sap in maple trees	SSR 1F – Maple Syrup Harvest Season	Perkins, et al. (2022). pp. 6-7 VanDenbergh, S. (2022). (SSR 1F)
*Identify essential ways to create optimal conditions for sap storage	<i>In-person activity at host site</i>	Perkins, et al. (2022). pp. 6-2 & 6-5 to 6-9 Wolfe, L.M. (2019). pp. 45 <i>Host Guide: Week 1-Woods Work, Item #6 & #7</i>
Create a plan to collect, store and transport sap for boiling	SSR 1G – Planning for Tapping and Storage	Cameron, J. (1995). Document file pp. 41- 43, Sections: <i>How do you tap a tree?</i> , <i>How many tap holes in a tree?</i> , <i>Buckets or Tubing</i> , <i>Sap Collection and Storage</i> , <i>Wrapping It Up</i> (SSR 1G) Cornell Maple Program (2020). pp.31-68 & 76

		Wolfe, L.M. (2019) pp.32-45
*Recognize one data collection and record keeping method for tapping trees	SSR 1H – Sampling and Estimation for Taps <i>In-person activity at host site</i>	Cornell Maple Program (2020). pp. 22-25 (SSR 1H) <i>Host Guide: Week 1-Woods Work, Item #8</i>
Demonstrate one data collection and record keeping method for tapping trees ¹	SSR 1H – Sampling and Estimation for Taps	Cornell Maple Program (2020). pp. 22-25 (SSR 1H)
Demonstrate how to tap a maple tree for tubing and bucket collections	<i>In-person activity at host site</i>	<i>Host Guide: Week 1-Woods Work, Item #4 & #5</i>
*Recognize a method to collect, transport, and store sap for boiling	SSR 1I – Sap Collection, Transport, & Storage Systems	Perkins, et al. (2022). pp. 6-13 to 6-26 to 6-49, 6-53 to 6-56 & 6-64 to 6-67 Wolfe, L.M. (2019). pp. 32-41 & 45 (SSR 1I)
*Relate agriculture practices in a maple forest with long-term sustainability of production	SSR 1J - Food Web <i>In-person activity at host site</i>	New York State Maple Producers Association (2017). Document file pp. 27-28. (SSR 1J) Perkins, et al. (2022). pp. 6-30 & Chapter 5

¹ This learning objective can lead to instructional alignment with AFNR Standards: CRP.07. Employ valid and reliable research strategies; CRP.07.01. Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.

		Wolfe, L.M. (2019). pp. 7-12 <i>Host Guide: Week 1-Woods Work, Item #9</i>
*Describe care for maple trees and sap collection equipment after sap collection has ended	SSR 1K – End of Season Care for Trees and Sap Equipment	Perkins, et al. (2022). p. 6-30 & Chapter 5 Wolfe, L.M. (2019). pp. 32-33, 43, 45, 55 (SSR 1K)
*Identify workplace traits and skills that are transferable from optimal maple forest sap collection practices to other industries.	Activity by UMaine Extension Staff	National Council for Agricultural Education (2024).
*Recognize four or more occupational activities that are connected to woods work in maple forests for maple sugaring.	Activity by UMaine Extension Staff	National Center for O*NET Development (2024). U.S. Bureau of Labor Statistics (July 25, 2023)

Sources and References:

- Blumenstock, M. & Hopkins, K. (2020). *Bulletin # 7036: How to Tap Maple Trees and Make Maple Syrup*. University of Maine Cooperative Extension. https://extension.umaine.edu/publications/wp-content/uploads/sites/52/2022/12/7036-How-to-Tap-Maple-Trees_2022.pdf
- Cameron, J. (1995). *Maple Syrup General Level: Guide for Leaders and Youth Leaders*, Ontario 4-H Council. <https://4-hontario.ca/wp-content/uploads/2022/01/Maple-Syrup-General.pdf>
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- New Hampshire Agriculture in the Classroom. (2023). *Tapping into Maple Tradition: Lessons and Activities*. https://newhampshire.agclassroom.org/resources/maple_lessons/
- New York Agriculture in the Classroom. (nd). *How sweet is Maple Sap?* <https://cdn.agclassroom.org/ny/resources/maple/HowSweetMapleSap.pdf>
- New York State Maple Producers Association. (2017). *Maple Activities-6th Grade*. <https://bpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/7/5773/files/2021/02/6th-grade-worksheets-revised.pdf>
- Perkins, T.D., R.B. Heiligmann, M.R. Koelling, and A.K. van den Berg (Editors). 2022. North American Maple Syrup Producers Manual. Third Edition. The University of Vermont and the North American Maple Syrup Council, Burlington, Vermont. www.mapleresearch.org/manual/
- VanDenbergh, S. (2022). *Maple Syrup Harvest Season*. Maple Syrup Data Challenge Curriculum: Gulf of Maine Research Institute. https://drive.google.com/drive/folders/1QQjVNSbXSabqNqhhN-IPRwCexwGseT_y?usp=sharing
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- Wolfe, L.M. (2019). *Maple: A Sap to Syrup Guide-A Manual for Career and Technical Centers of Vermont*. University of Vermont. https://www.uvm.edu/sites/default/files/media/Maple_Mini_Manual.pdf