

Growth and Opportunity for Maple Sugar Products



Aaron Wightman
Cornell Maple Program

Cornell Maple Program

Supporting maple syrup production through

APPLIED RESEARCH



EDUCATION



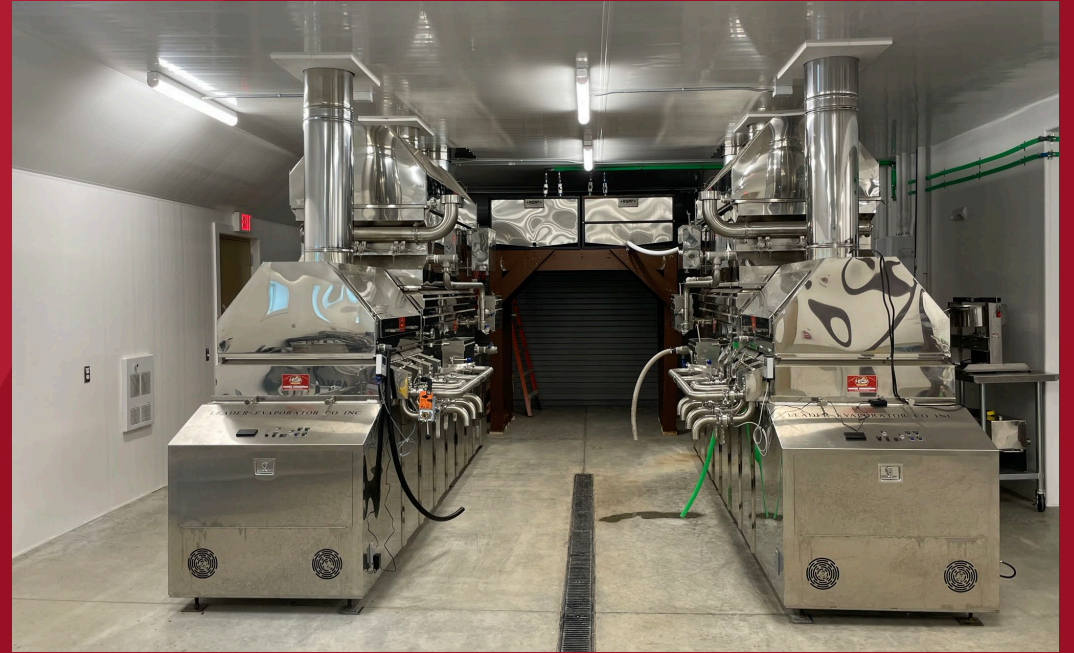
Uihlein Maple Research Forest

Lake Placid, NY



Arnot Maple Lab

Van Etten, NY



- Combined 15,000 maple taps over 600 acres
- Automated reverse osmosis and high-capacity vacuum
- Experimental sap aeration, ultrafiltration and concentrate chilling
- Sensor networks for sap flow and climate
- New product lab and research kitchen

Historic production data



Photo credit: North Country Public Radio

- Maple sugar primary sweetener in US through the early 20th century
- Production in New York peaked in 1918 with estimated 1,304,000 gallons produced
- At peak, maple sugar produced at industrial scale

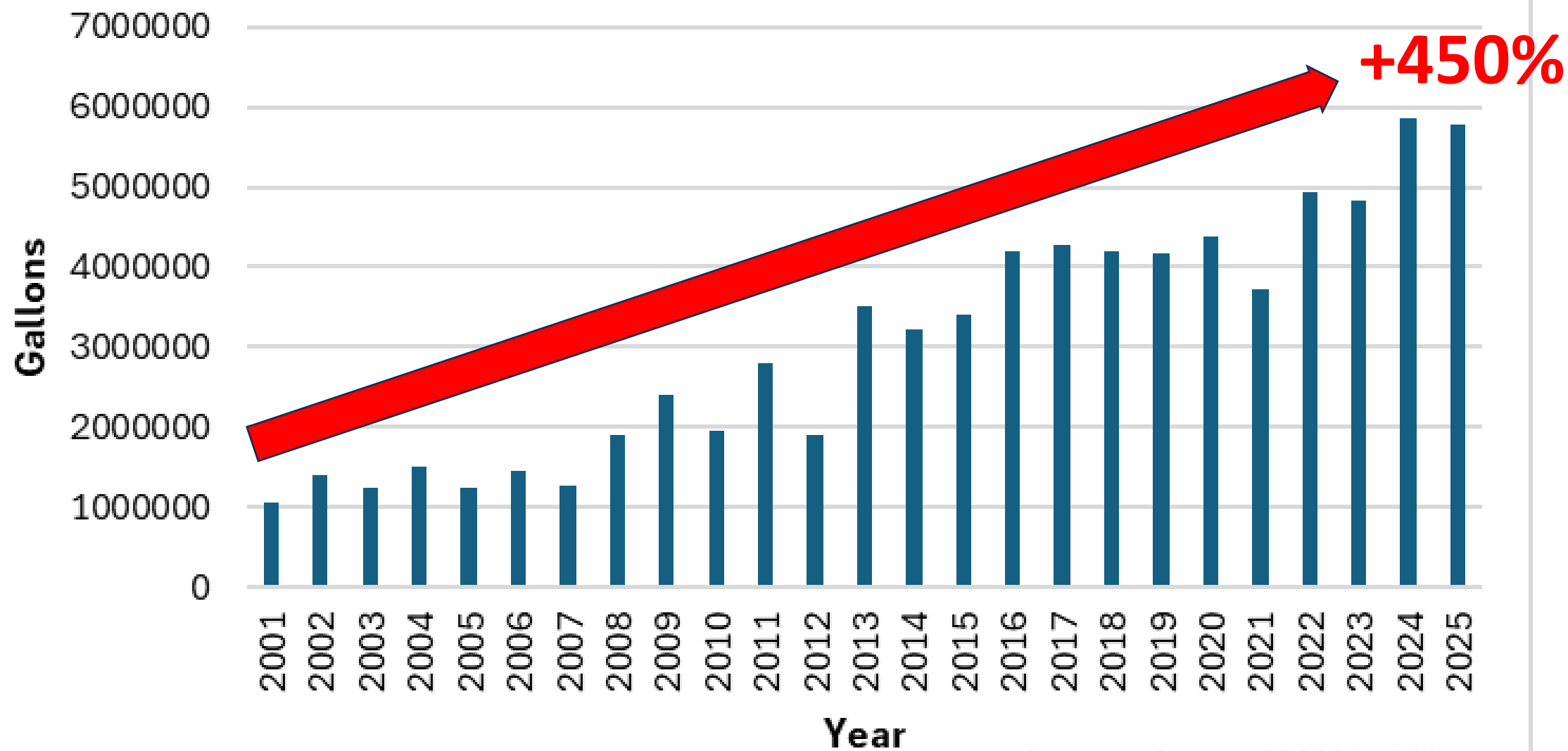
Decline from peak production



Photo credit: Matthew Thomas

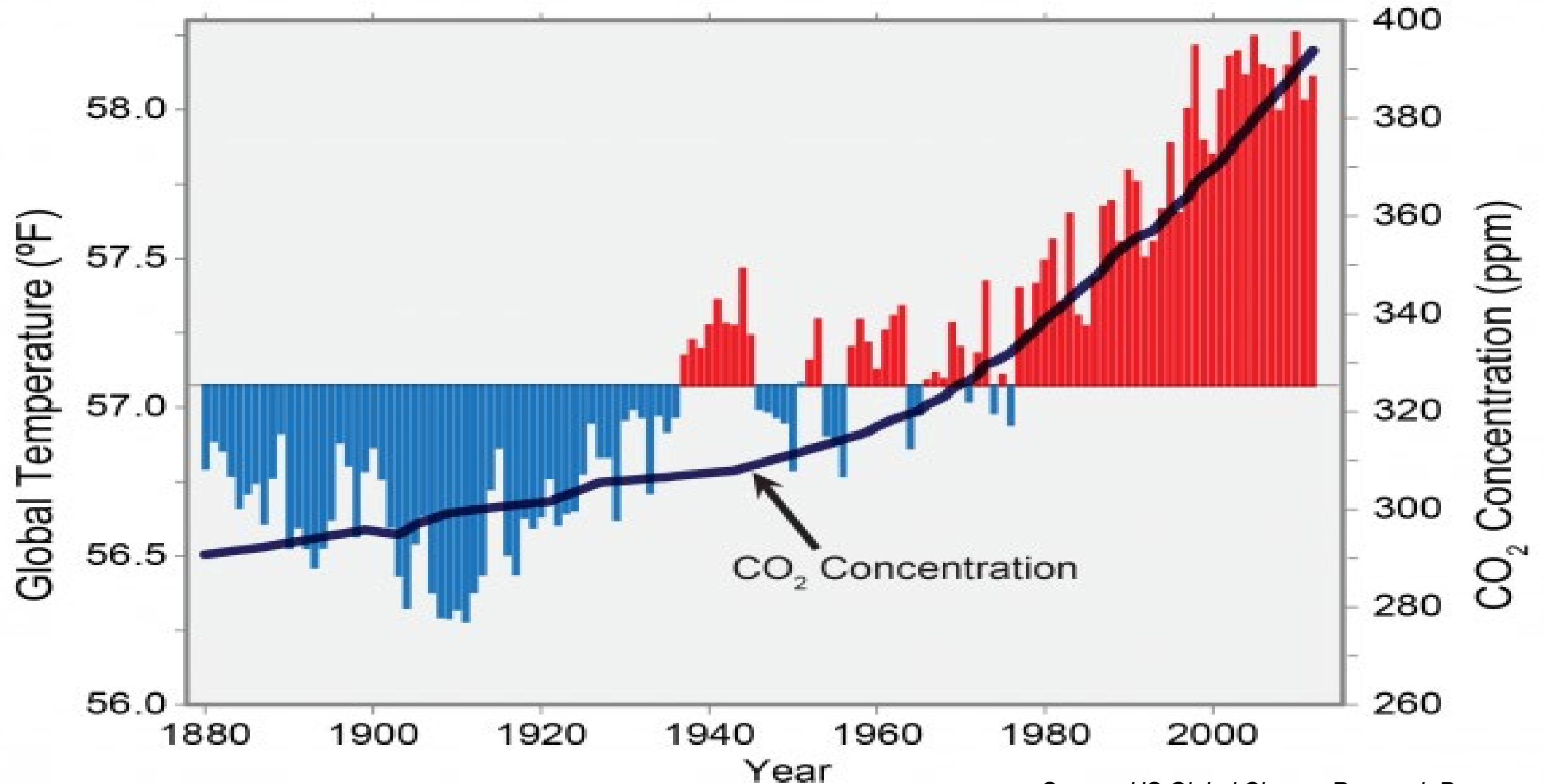
- Cane sugar and corn sugar outcompete maple
- Production steadily declines to low of 180,000 gallons in 1993
- Maple syrup persists as craft industry through 1990's

United States Maple Syrup Production

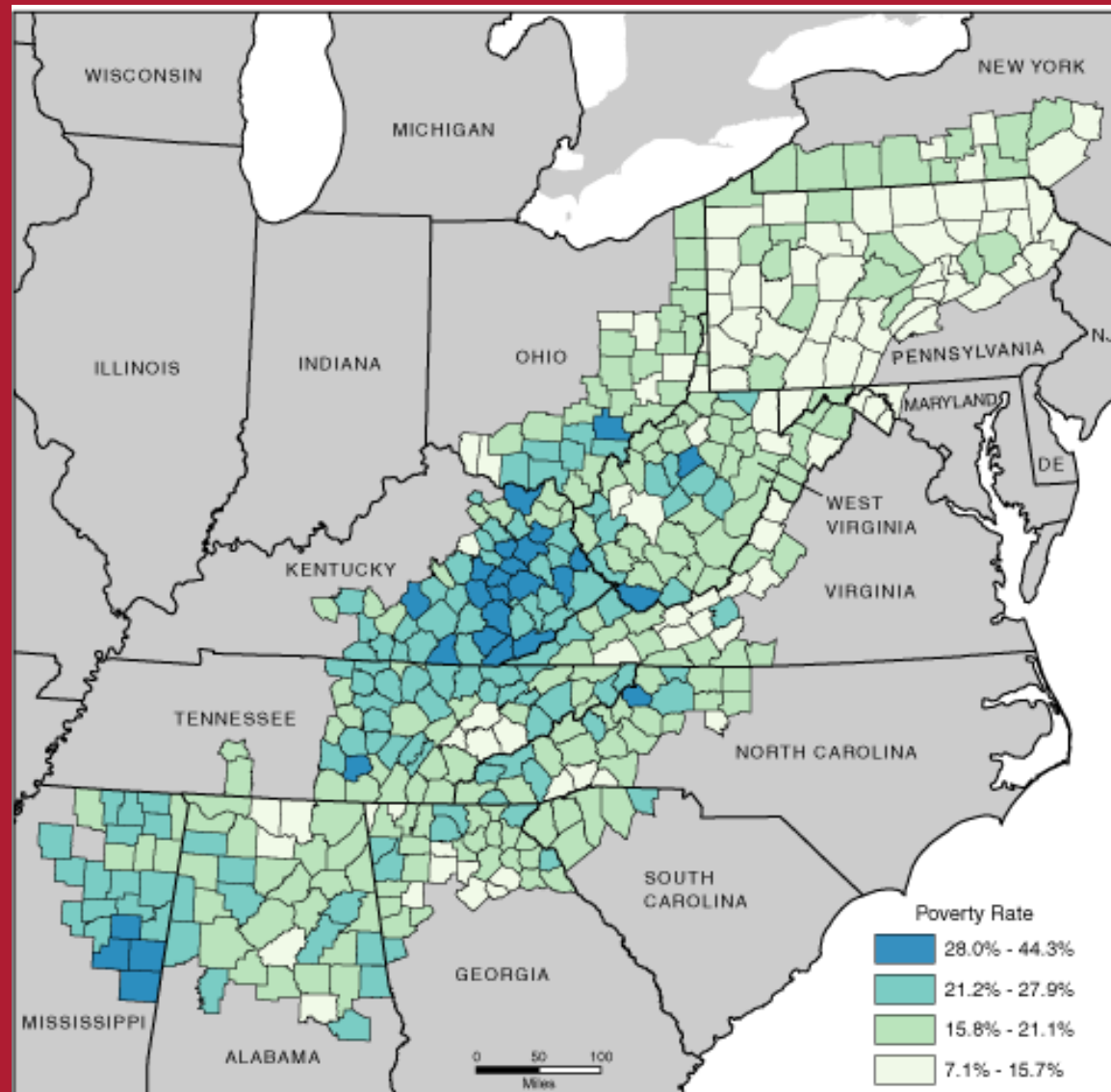


Source: USDA NASS 2001 - 2025

Global Temperature and Carbon Dioxide



Source: US Global Change Research Program



Created by the Appalachian Regional Commission, March 2016
Data Source: U.S. Census Bureau, American Community Survey, 2010–2014
Data Classification Scheme: Natural Breaks

U.S. average = 15.6%
Appalachian average = 17.2%

Persistent Rural Poverty

Agroforestry:

the intentional combination of trees and shrubs with crops and/or livestock on the same land to create productive and sustainable systems

Benefits:

- Improved soil health
- higher crop yields
- new income sources
- enhancing biodiversity
- resilience to climate change



5 Recognized Agroforestry Practices

Alley cropping:

Planting crops in the "alleys" between rows of trees or shrubs.

Forest farming:

Growing high-value specialty crops under a forest canopy.

Riparian forest buffers:

Creating buffers of trees, shrubs, along waterways to protect aquatic ecosystems

Silvopasture:

Combining trees with livestock and forage, providing shelter for animals and revenue from both timber and grazing.

Windbreaks:

Planting rows of trees or shrubs to protect crops, animals, buildings, and soil from wind, snow, and dust.

Designing sustainable multistory cropping systems for maple sugarbushes

McIntire-Stennis Capacity Grant
3-year project

2 Primary Objectives

- Trial plants with potential to grow in understory with maple-compatible crops
- Develop value-added products from agroforestry crops and maple







Aronia
Black currant
Red currant
Cornelian cherry
Serviceberry
Jostaberry
Hazelnut
Pawpaw
Elderberry

Honeyberry
Lingonberry
Kinnikinnick
Persimmon
Gooseberry
Blueberry
Blackberry
Black raspberry
Hearty peach







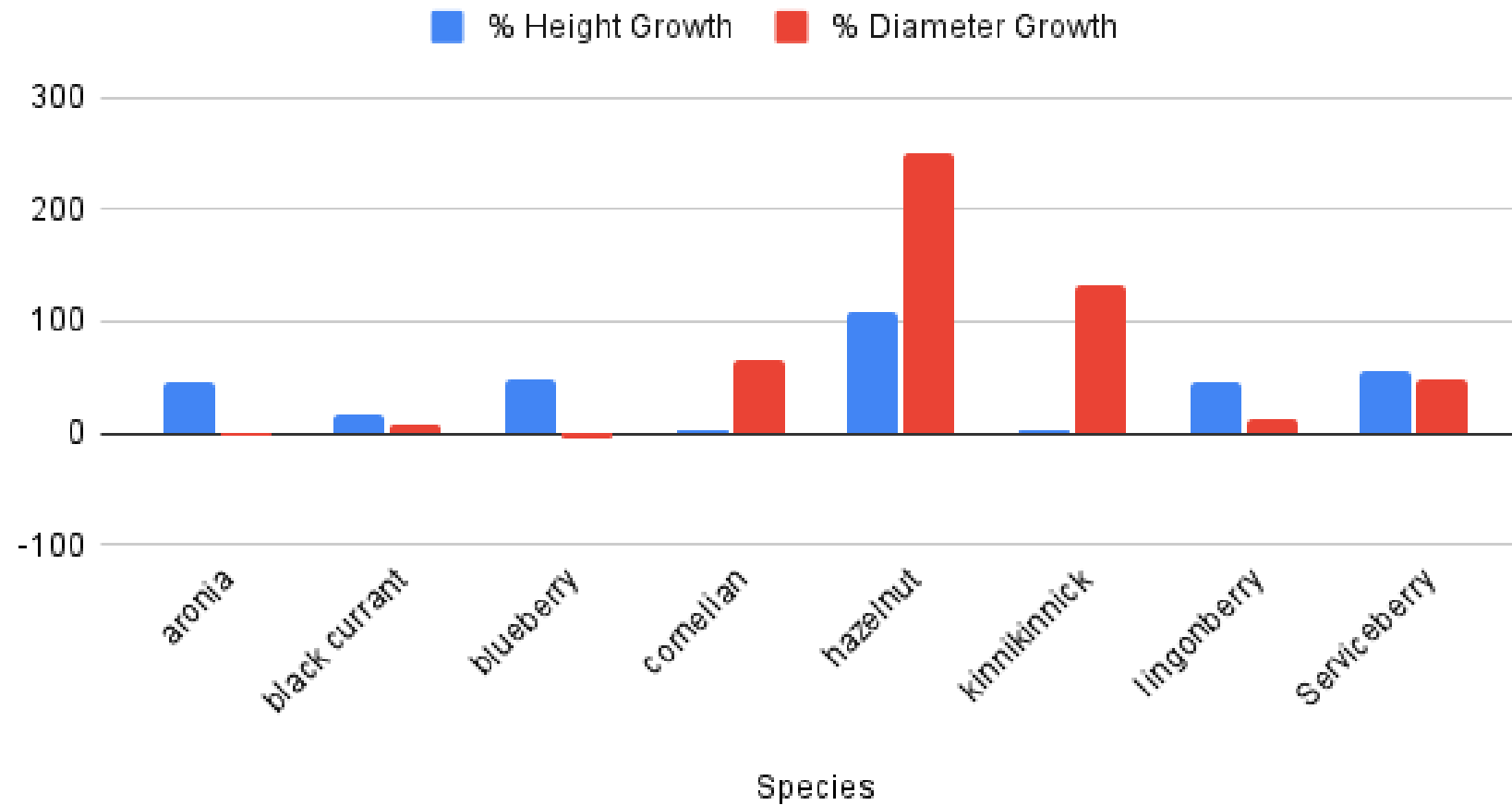








2-Year Agroforestry Crop Growth



Pilot product: Maple Elderberry Wine

Crops: Elderberries, maple syrup

Tests conducted: comparative wine style tests, sensory analysis

Noteworthy Findings: Wine trials with steam-juiced elderberry products: 1) Elderberry juice produced through steam-juicing, chaptalized (sweetened) with maple syrup to wine must °brix (~19 °brix which will result in ~11.5% ABV). 2) Maple wine fermented on spent elderberry skins, i.e., infused with elderberry pulp retained after steam-juicing. Some of this rosé-like wine was retained for carbonating (sparkling rosé). The two wine styles were tested for flavor, quality, and any unforeseen practical issues. It was found that for Wine 1, citric acid content was too high to successfully conduct a malolactic fermentation (MLF) post-alcoholic fermentation. Attempting MLF will result in an unsaleable and unsalvageable product. Without MLF, the wine is very pleasant, with notes of dark fruits, bramble, and with notable maple flavor. This product will need to be well stabilized with sulfur (potassium metabisulfite) to prevent metabolism of unstable acids. MLF was not attempted for Wine 2 which resulted in two high-quality wines, both still and sparkling.



Serviceberry Maple Fruit Leather

Ingredients:

1 lb serviceberries roughly 4 cups

½ cup maple syrup

Pinch of kosher salt about ¼ teaspoon

Instructions:

In a small saucepan, heat the serviceberries, maple and salt. When the berries are hot and bubbling, puree the mixture with a handblender or in the bowl of a blender.

If using a highspeed blender like a vitamix, make sure not to puree the mixture so hard that it purees the seeds.

You should have a thick puree.

Spread the mixture on a silpat or nonstick baking sheet, or even wax paper, then dehydrate at 135 (fruit setting) for about 8-9 hours, or until the leather is dried, but still slightly pliable.

There should be visible chunks of seeds in the leather, which add a great texture.



Maple Pawpaw Ice Cream



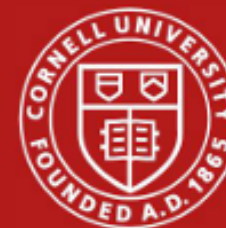
Ingredients:

- 1 1/2 cups mashed paw paws
- 2 cups cream
- 2 cups milk
- 1 cup maple sugar
- 1 teaspoon vanilla extract
- 5 egg yolks



Maple Hazelnut Spread

Catherine Monserrate Ph.D., 2024



Overview

Maple and chocolate maple hazelnut spread recipes were developed using maple sugar and hazelnuts as the primary ingredients. The recipes were designed with ingredients known for their antioxidant, mineral, vitamin, and protein contents. With a market for nut-based spreads expected to grow at a compound annual growth rate of 7% between 2024 and 2029 (Market Data Forecast, 2024), this sweet treat is ideal for maple and chocolate consumers. Nut spreads have various uses, including spread on fresh fruit, pancakes, crepes, toast, pretzels, or other snack products. An overview of ingredients, recipes, regulation requirements for commercial production, packaging information, and pricing information are presented below.



Thank You!

Aaron Wightman

*Senior Extension Associate
Co-Director Cornell Maple Program
NYS Maple Specialist*

arw6@cornell.edu

Cornellmaple.com

Sweet Talk: All Things Maple

