

NTFPs from Trees: Nontimber Forest Products that Support our Society and Economy

SUGAR MAPLE

Product: Maple syrup
Plant parts used: Sap



Sugar maple (*Acer saccharum* Marsh) grows on a variety of sites and soils and does best on well-drained loams with soil pH ranging from 5.5 to 7.3. It is found throughout New England, New York, Pennsylvania, and the mid-Atlantic States (shown in green on the map below). Sugar maple is a major component of 7 forest type groups and is a common associate in 17 other forest types. Seedlings are very shade tolerant and may survive long periods living below the canopy.



Key Points

- Sugar maple produces sap for maple syrup—the iconic forest food of the Northeastern United States.
- The markets for maple syrup have increased tremendously over the last 2 decades, and they have potential for continued growth.
- Over the last 2 decades, the net change in sugar maple (measured in cubic feet per acre of forest land) has been trending steadily negative.
- Managing for sap may not be optimal for timber production but may provide opportunities for growing food and medicine in the understory (i.e., forest farming).
- Climate change could increase mortality of sugar maple, particularly in Southern States, which would have negative consequences on the industry and economic livelihood of producers.

Nontimber Uses

- Native Americans made maple sugar long before the arrival of European immigrants. Historically, sugar maple and wild rice were the most important plants for staple foods.
- Maple sugar was a valuable trade item with the decline of the fur trade in the 19th century. Thomas Jefferson advocated that every farmer have a sugar maple stand to be self-sufficient and independent from the European-dominated sugar trade.
- Today, maple trees are tapped in early spring. Each tree can produce as much as 34 gallons of sap, which boils down to about 1 gallon of syrup.
- Maple sap may have medicinal values, as well, including antioxidant and anti-inflammatory properties.

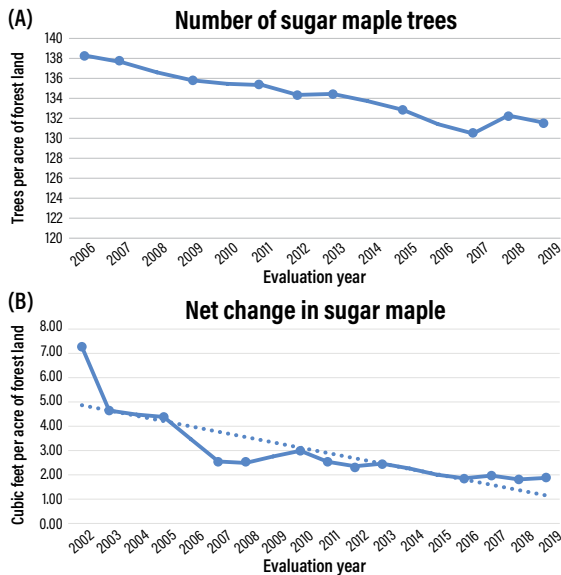
Markets

- Production of maple syrup is distributed primarily across 10 States, with >75 percent of production from Vermont, New York, and Maine.
- In 2018, the value of maple syrup production exceeded \$140 million.
- From 2000 through 2020, annual production increased by >250 percent, from 1.2 million gallons to over 4.4 million gallons. Over the same period, maple syrup imports increased to 5.4 million gallons, while exports increased to about 1 million gallons.
- The value per acre of maple syrup is competitive with timber, and in some situations may exceed it.

Any medical or pesticide use described in this publication is for reader information and does not imply endorsement by the U.S. Department of Agriculture.

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Status^a

- In 2012, there were an estimated 2 billion sugar maple and red maple trees that could be tapped; about 45 percent of these trees were in stands with insufficient density for commercial production.
- Examining Forest Inventory and Analysis (FIA) data from 2006–2019 reveals that the number of sugar maple trees per acre has declined slightly over the years (see chart [A]). Kansas had the most trees per acre, followed by Minnesota and Michigan.
- There was a steady negative trend in net change in sugar maple from 2002–2019, indicating that mortality and removals exceeded growth (see chart [B]).
- High concentrations of mortality were recorded in West Virginia, the Upper Peninsula of Michigan, and most FIA units in New England.

^aEstimates are based on observations of at least one specimen of the species in an inventory plot (representing about 6,000 acres of forest land). They are not based on all forest land for the State.

Management and Implications

- Sap production correlates with canopy size. Stands are thinned and widely spaced to encourage wide crowns, creating tree forms that lower timber value.
- Forest farming of native plants for food and medicine in the understory of sugar maple stands can provide alternative uses for private landowners and may improve biodiversity conservation and income sources.
- Climate change models project continued loss of sugar maple habitat, especially in southern regions.
- Significant changes in sugar maple populations would create major changes in nitrogen cycling in eastern forests, with consequences to forest ecosystems.
- Climate change could affect maple syrup production if the number of sap flow days declines.

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The U.S. Department of Agriculture Forest Service **Forest Inventory and Analysis (FIA)** program tracks growth, mortality, and removals of forest trees and more. For additional information: <https://www.fia.fs.fed.us/>



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