

Research: Birch

Research Update on Birch Sap & Syrup Trials

Michael Farrell, Director, The Uihlein Forest, Cornell University

For the past several years we have been conducting research and extension on tapping birch trees for their sap and syrup production, and in 2015 we received funding from the Northern NY Agricultural Development Program and Cornell University's Agricultural Experiment Station to conduct additional trials. There are many aspects of birch tapping that are similar to maple and other aspects that are entirely different, and more research is necessary understand the nature of these differences and how to best make use of the birch resource. This article presents some of the lessons learned to date on some of the most frequently asked questions about tapping birch trees.

What is the average yield of sap & syrup per tap?

As with maple, the amount of sap and syrup you can expect per tap will vary tremendously from tree to tree and from year to year. On average, it appears that a birch tree will produce between 10 and 20 gallons of usable sap per tap. The amount can vary greatly depending on when the tap is placed and the weather conditions that spring. We don't yet have conclusive evidence regarding how the timing of tapping impacts overall yield, but there is concern that if you wait until the maple season is completely over before tapping birch trees that you could miss out on a substantial amount of early season sap flow (UVM is currently conducting research on this).

Although there is tremendous variation between trees and between sites,

the average yield seems to be about .1 gallons of syrup per tap. One of the biggest factors that determines the syrup yield is the sugar content of the sap. An average tree seems to produce about a gallon of sap per day, but the sugar content can be as low as 0.1 brix or as high as 1.2, with most trees yielding between .5 to .8 brix. As with maple, the weather conditions play an important role in sap yield, and overall production seems to be highly dependent on groundwater reserves. 2016 was a disastrous year for birch production throughout the northeast, as the extremely dry conditions during April and early May resulted in severely diminished sap flows.

What species of birch are best for sap and syrup production?

Our trials did not show any significant difference between different species of birch (yellow, paper, black) in terms of sap sugar concentration or volume. However, due to the relatively high sawtimber prices for yellow birch, if you have various species available for tapping, it would make more sense to tap the black birch and paper birch (which have relatively low sawlog values) and refrain from tapping any yellow birch that could potentially generate high value sawlogs. Nevertheless, if you are able to obtain decent yields and develop good markets for your birch sap and syrup, unless the yellow birch trees are prime veneer, tapping them will be more profitable than managing for timber production over the long-term.

Does vacuum boost yields?

None of our trials to date have shown

a benefit of adding vacuum to a tubing system in terms of increased yield. In fact, the trees with individual buckets or bags have produced the highest yields in nearly every trial so far. However, tubing systems do greatly reduce labor costs and adding vacuum does allow sap to flow through the tubing faster, thereby increasing sap quality.

Does the size of the spout matter?

Many birch syrup producers use 7/16" spouts and all indications point to the fact that larger spouts will produce more sap than smaller spouts. We had some trees tapped with 7/16" spouts, and those greatly outperformed 5/16" spouts. We also experimented with 3/16" microspouts, but these produced far less than 5/16" spouts at all locations. We were interested in trying the 3/16" microspouts due to concern over internal stain columns from 5/16" or 7/16" tapholes. The idea was to see if we could get similar yields of sap with a smaller hole, while doing less damage to the tree. The differences in yields between the 3/16" and 5/16" holes were so stark that we will not be repeating this experiment again. However, more research is necessary to determine how much more sap 7/16" spouts provide

over 5/16" with birch and the sustainability of using the larger spouts.

How does the birch syrup taste?

Birch syrup has a much different flavor profile than maple syrup and many sugarmakers do not like the taste of birch syrup. Yes, there is certainly plenty of off-flavored birch syrup out there, but there is also plenty of delicious, high quality birch syrup on the market as well. It's much easier to make a good tasting maple syrup, but with skill, patience, and the right equipment you can also make very good tasting birch syrup. At the 1st International Birch Sap & Syrup Conference in 2015 at Paul Smiths College, we had many producers bring some of their birch syrup for people to taste and the results were incredible. Birch syrup is often dark and strong flavored, but depending on the processing techniques, it can also have a lighter color and much more mild flavor. If you have written off birch syrup based on a bad experience in the past, I suggest giving it a second try. The University of Alaska and UVM are both currently conducting research on different processing techniques to determine optimum flavor development in birch syrup.

Make every tap count!

If great sap yield, minimal tree damage, no plastic waste, and time saved in your sugar bush mean something to you, NOW is the time to order your Maple Infinity Spiles.

**Stainless steel and leak-free
A truly green solution**



Maple Hill Farms

107 C Crapser Rd., Cobleskill, NY 12043 • 1-800-543-5379 • maplehillfarms.biz