



*A spile, or spout, is inserted into maple trees so that maple sap can be collected.*

# Non-Timber Forest Products

by Deborah Hill



*Photo courtesy: Chris Evans, River to River CWMA, Bugwood.org*

*All photos courtesy except maple leaf: Carol Spence, UK Ag Communications*

## *Producing Maple Syrup in Kentucky*

Kentucky woodland owners may find that they have a lot of maple trees in their woodlots. If these trees are larger than 10 inches in diameter, and if there are 25 to 40 maple trees per acre, those owners might want to think about making maple syrup as an option for increasing income from their woodlots.

Maple syrup has been produced in the United States since before Europeans arrived, so a lot of information is available in various forms (look for videos on YouTube, or visit [MapleTrader.com](http://MapleTrader.com)). Kentucky is not likely to be competitive with the established northern markets, but there are good opportunities for producing “Kentucky” or “southern” maple syrup on a smaller scale, especially as a niche market product or what is called a “cottage industry,” meaning small scale and often cooperative production.

Maple syrup is a natural sweetener, often used on pancakes and waffles. It has recently been determined to have antioxidants and other beneficial chemicals in it, so it not only tastes great, it’s GOOD for you! It’s made by concentrating the naturally sweet sap of maple trees by boiling it down until it thickens into a sugary syrup. It takes many gallons of sap to make one gallon of syrup (40:1 is the industry standard), which is why the “real” stuff is so expensive. All maples (*Acer* spp.) can produce maple syrup. The higher the sugar content of the sap, the fewer gallons it takes to make a gallon of syrup. Sugar maple (*A. saccharum*) and black maple (*A. nigrum*) are the best producers (volume of sap) and have the highest sugar content in their saps—75% of all commercial maple syrup is from sugar maples.

How do maple trees make maple syrup? The tree leaves

are factories that make sugars as food for the continued growth of the tree. In the fall when the leaves change color, the trees shut down their food-producing activities and prepare to store food in their roots for the winter. As daylight increases after December 21, the trees prepare for the warm days of spring and for leaf production. Sap begins to move upward in the trees, at that point containing the stored sugars from the roots. Temperatures affect this sap flow—a combination of cold nights (20°-35° F) and warm days (45°-55° F) are optimal. For the northern part of Kentucky, it’s easy to remember to tap between Valentine’s Day (February 14) and St. Patrick’s Day (March 17). Farther south, it may be important to start earlier (mid-January). It all depends on that cold night/mild day combination. However, be prepared to tap any time after the New Year.

In a “sugar bush” (the term for a woodlot where syrup production is the major use) the trees are widely spaced so that they will grow in diameter and make large crowns. Crowns that are both broad and deep are extremely important for good sap production. Start in your woodlot by estimating how many maple trees you have per acre. Measure the diameter of



*A relatively new way to collect maple sap is through the use of plastic tubing. The plastic tubing is connected to the taps and using gravity the sap flows to a collection reservoir such as a plastic bucket or holding tank.*

the trees about 4½ feet from the ground to determine the number of taps per tree. To protect the trees' health, do not put taps in any tree smaller than 10 inches in diameter.

It is important to follow these guidelines. Over-tapping harms the trees; under-tapping reduces the sap yield without doing anything positive for the trees. A commercially profitable sugaring business should have 70-90 taps/acre and 20+ acres of woodland. Taking care of the trees—following the guidelines, clearing competition from the sap trees, pruning dead branches, etc.—is a good management practice. Aim for a sugar bush of 25-30 productive trees per acre.

Tree diameter (inches)	No. of taps
10-15	1
16-20	2
21-25	3
25+	4 or less

Making maple syrup from maple sap is one way to use a woodlot profitably. Check with a consulting forester or a service forester from the Kentucky Division of Forestry to develop a management plan. If a sugar bush is the desired outcome, the plan will show which trees should be cut to benefit the maple trees. Some of the material removed can be used to fuel the firebox used in syrup making. Maple syrup production is intensive work for a relatively short period of time (4 to 6 weeks) but is demanding when there are few other farm or woodlot demands.

**About the Author:**

**Deborah Hill, Ph.D.** is a forestry extension professor and forestry extension specialist at the University of Kentucky Department of Forestry, she is responsible primarily for programs in non-timber forest products. She also works with 4-H and youth, and in the areas of urban forestry, agroforestry, and permaculture. She has developed landowner programs in Christmas tree and shiitake mushroom production.

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# From the Woods...

## Producing Maple Syrup

A discussion with Lee Blythe of Federal Grove in Auburn, KY

**KWM:** *What gave you the idea to get started in maple syrup production?*

**LB:** Our successful Bed and Breakfast was looking for some kind of locally grown agricultural product to add value to our clients' experience. Strawberries didn't seem just right, and my father-in-law in Anderson County had made some small batches of maple syrup.

We have maple trees all over the property, so we thought 'why not?'

**KWM:** *How did you get started and how long have you been at it?*

**LB:** In 2009, we collected sap from about 110 taps and had the batch processed by some local Amish people in Allen County.

**KWM:** *What advice would you give someone wanting to start this business?*

**LB:** You must have TIME to devote to this— kind of like milking cows. Once the maple sap starts running in the late winter, you have to watch it 24/7. Watch the weather—you are looking for cold nights

followed by moderate days

(40s or 50s F). Know your trees— you can make syrup from any species of maple tree, but you need to be able to identify them without their leaves or mark them the fall before when the leaves are still on. Start with about 100 taps (remember that you can put more than one tap in big trees) and do a batch in a small evaporator (3' x 6'). It will be a slow process, measured in gallons of sap per hour. The first run needs to "sweeten" the evaporator. Once you have reached the correct concentration for syrup, the later batches will form syrup more quickly.



**KWM:** *Do you believe there is potential for people to be providers of sap instead of making the maple syrup themselves?*

**LB:** Yes! Considering the expense of the syrup-making equipment, that may be the wisest way for someone to get started. Spiles, tubing, and buckets aren't that expensive.

**KWM:** *Kentucky is famous for a number of things; do you think maple syrup could be next?*

**LB:** As a "cottage industry" or niche market, we could certainly develop a "southern maple syrup."