

Branching Out: Alternative Tree Saps Integrated with Agroforestry

*A Case Study By The
Livelihoods Knowledge Exchange Network*

BACKGROUND

The sign posted at the entrance to Tonoloway Farm bespeaks pride in being a working forest farm, research facility, and outdoor recreational space. As the leading producer of black walnut syrup in North America, Tonoloway collaborates with and garners support from Virginia Tech, the USDA Sustainable Agriculture Research and Education program, and other research partners. Tonoloway farm, located near McDowell, in Highland County Virginia, is owned by Christoph and Lauren Herby who settled here 4-5 years ago. Both had worked overseas and wanted to settle in on a farm. They started building a house and grazing sheep on the slopes, as they started growing vegetables and herbs. The forested areas on the farm are well stocked with sugar maple and black walnut trees. During a workshop they attended in 2017, they toured a nearby maple syrup operation (see scenario on Laurel Fork Sapsuckers) and the rest is history! Starting with making maple syrup and then adding black walnut syrup and other agroforestry products, the farm has become successful in a short period of time. The operation has grown quickly, and now is considered the largest black walnut syrup producer in North America.

THE LAND

The farm is named for the Tonoloway limestone formation found here which runs through West Virginia into Pennsylvania. This karst topography typically forms caves and outcroppings. And as Christoph says, "We at first had really nothing but rocks out here." Many of the steep slopes that were pastures now harbor trees - many



of which are black walnut. The farm straddles land that was given to and settled by a group of freed slaves after the Civil War. Christoph plans to donate a piece of roadside land large enough for a historic marker and space for motorists to pull over. The Herbys filled a large part of their open land with a chestnut plantation and planted fruit trees. But they needed some income before these tree crops would bear fruit. Since Highland County is a center for maple syrup production, syrup making made sense as a way to begin their agroforestry operation.



Sign at the entrance of Tonoloway Farm. Photo by Mary Hufford.

After attending a local syrup making workshop, they started with producing maple syrup, but then realized that we had a lot more walnuts than maple trees. Initially this was seen by the Herbys as an “impediment towards making a lot of maple syrup until we realized we can make walnut syrup instead and, and focus on that. . . . And as the discovery process unfolded little by little, we realized this place wants to be a forest. So, let’s that land be forest and work with it in being what it wants to be rather than trying to impose a different model”.

They started making hickory syrup, “you harvest the bark of the shag bark, which peels away naturally anyway, so it’s not harmful to the tree. We clean it and roast it till it turns smoky, and then grind it ... and make tea from it. It’s sweetened with organic cane sugar. It’s just another way of, you know, sharing a unique taste of something from the area. But I’m more partial to this stuff that comes right from the tree sap though the walnut syrup especially.”

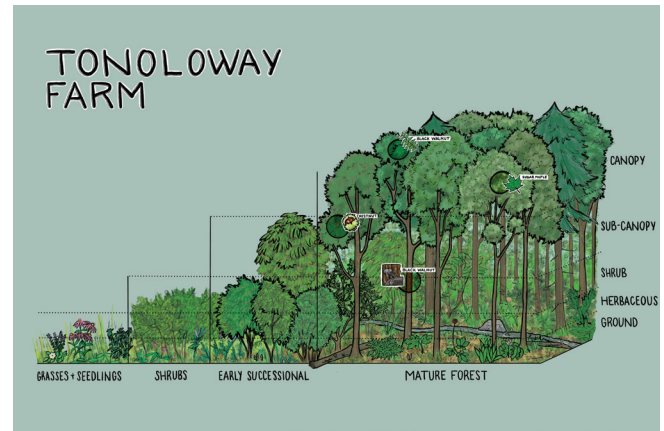


Once mature, the chestnut plantation will help conserve the soil on the ridgetop while diversifying the products offered at Tonoloway.
Photo by Tom Hammett

FARM FORESTRY MANAGEMENT AND PRODUCTION

In Central Appalachia, forest farming can engage multiple layers of woodland, including canopy, subcanopy, shrub, herbaceous, and ground level. Tonoloway Farm is engaging canopy (chestnuts), subcanopy (tree saps), and ground level (shiitake mushrooms).

Farm forestry does not have to be on a large scale. For black walnut syrup Herby is moving sap around on his pickup truck and doesn’t feel the need to have a tanker, and modest workshop to house his operation. According to Herby, if one is producing



Engaging multiple levels of Central Appalachia’s mixed mesophytic forest, Tonoloway is developing a variety of options for farm forestry.
Artwork by Carly Thaw.

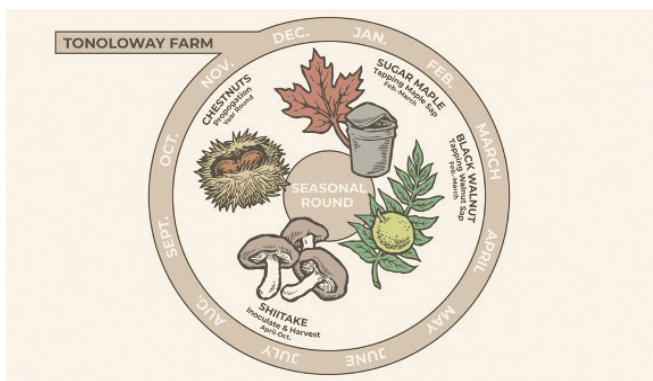
maple syrup, and really wants to make a living from it, one would need to tap four or five thousand trees, and need to process 1000s of gallons per day. . . .What’s cool about walnut syrup is -- on a phenomenal day I’ll get 300 gallons of black walnut sap. In the maple syrup business 300 gallons would be laughed at as you need to have 1000s of sap each day to make a commercially viable quantity of maple syrup.”

“We do selectively thin so as to benefit the stands of maples and walnuts. Removing diseased trees or trees that are not thriving and making more room in the canopy for those that are doing well. The stands are on difficult terrain to manage. It’s not easy logging. We can’t [easily] move equipment in and out of those woods.”

According to Christoph, collecting tree sap and making syrup is “complimentary with other agricultural work and nothing else is happening in February on a vegetable farm”. The secret is to diversify your products (crops) and services so that the farm has income on more than just a seasonal basis, spread throughout the year. Will Shepard has joined the team as farm manager and adds to the team his experience with producing other crops and products.

Hiring a seasonal helper during the syrup making season (primarily from January through March), was according to Christoph “a really good move and we’ll definitely continue doing that in the future”. After the farm had made both maple and black walnut syrup for a few seasons, Christoph decided recently to focus only on making black walnut syrup. This is saving the time and labor needed to clean equipment when switching between the two species.

Black walnut syrup is made much like making maple syrup - boiling down sap in this case native black



The life cycles of Tonoloway farm products allow for synchronizing labor around the seasons. Artwork by Our Numinous Mind.

walnut trees. “While equal to maple syrup in sugar content black walnut syrup is more complex in flavor and also contains natural pectin that makes the syrup more viscous. One may notice mineral particles forming a pectin like material in the syrup. Many will just shake the bottle to mix these particles back into the syrup. With assistance from Future Generations University, the farm began experimenting with a centrifuge to process out some if not most of the pectin.



Christoph Herby, fueling the wood-fired evaporator during the 2022 Highland Maple Festival. Photo by Daisy Ahlstone

MARKETING

Christoph’s hope is that more of his customers would tap a tree in their yard to learn a little bit about what goes into the process. The staff at Tonoloway are always seeking to educate folk about the effort it takes to make a gallon of syrup. Much of the syrup is sold from the farm during the two weekends of the maple syrup festival in March every year. The rest is sold online or through farmers markets.

Retail prices of black walnut syrup exceed by seven times the price of maple syrup. It is exciting that



Christoph Herby showing Tonoloway’s shiitake mushroom cultivation to Bethani Turley and Chrissa Mae Kalal. Tending mushrooms in the summer supplements the work of maple syrup making in the winter months. Photo by Tom Hammett.

culinary interest in black walnut syrup has been growing. This offers landowners new and sometimes far reaching markets.

When asked, do you make other products from black walnuts? Herby responded “we made nocino, which is an Italian liqueur made from green walnuts.” To expand the market, Christoph limited each purchaser to buying only one bottle of black walnut syrup. This has helped increase customer knowledge of this new product and develop a customer following for black walnut syrup. Not selling fruits or other perishable products is a plus. “If I am at a farmer’s market and haven’t sold my syrup, I can just bring it home and sell it the next week.” The farm also has had online sales of over 600 orders from all over the country.



Will Shepard, Tonoloway Farm manager, with Christoff Herby in their shop, where visitors were able to sample walnut, maple, hickory, and cider flavored syrups offered by Tonoloway during the 2022 Highland Maple Festival. Photo by Daisy Ahlstone.

FUTURE PLANS

Tonoloway has from its beginning looked for better and more efficient ways to produce and market its products. An ongoing research project with Virginia Tech and funded by USDA SARE has focused on improved sap harvest through vacuum technologies, and assessing the taste and other characteristics of black walnut syrup. The hope is to establish a grading system for black walnut syrup much like the system that exists for maple syrup. The farm is also collaborating with Virginia Tech on a study to determine a pectin-like substance that appears in Black Walnut sap after it is boiled in the syrup making process. Samples of their syrup are being studied in the food science lab at Virginia Tech to determine the make up of this substance, and ways to eliminate it from the syrup. The farm is developing new processing methods and products for this unique Appalachian tree syrup and continues to seek other crops and products to diversify its livelihood sources. It has established a small mushroom operation and raises some specialty crops to supplement the syrup production. Will Shepard, the forest farm manager, brings experience with botanicals to the farm.

A barn-like post and beam structure has been crafted from local and on-farm materials. Built by Christoph with the assistance of Highland County craftsmen, upstairs it houses a small office and living quarters for a seasonal employee and visitors. And downstairs has space for syrup production and storage, and packaging and outreach space.

Agrotourism is important to Tonoloway. Visitors to the farm will notice a network of sap harvest lines throughout the forest, in addition to pumps and sap collection tanks seen during the harvest season. As the trailhead sign advises, hikers are welcome to explore the trails but need to stay on the trails and refrain from touching sap lines or other equipment. Farm tours may be scheduled by appointment. The festival weekends



Post and beam sugar house made of locally sourced materials. Downstairs is the sales and storage space, and the evaporator. Upstairs is the office and quarters for a seasonal employee. Photo by Mary Hufford.

in March each year bring hundreds of visitors to the area. Many stop by to sample and buy syrup, and purchase other products made at Tonoloway.

When asked, “Do you think forest farming is a good name for this activity?” Herby replied, “I think it’s a fun name for it, just because it does value the forest itself as inherently something to be farmed, really stewarded and taken care of in a way that benefits the forest... , right? . . . I felt that these woods can produce wonderful syrup. And so, I’m here taking care of them.”

–Written by Tom Hammett

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