



Agritourism and the Highland View Farm, White Grass Ski Touring Center Maple Collaborative.

APRIL 2020

Sweet Opportunities

TAPPING WEST VIRGINIA'S MAPLE RESOURCE



This case study was part of the larger Sweet Opportunities program supported by Claude Worthington Benedum Foundation.

By Mike Rechlin

BACKGROUND:

The Sweet Opportunities Project of Future Generations University has the goal of increasing maple sap and syrup production in West Virginia by assisting in the establishment of “satellite sap collectors” that sell sap to existing “production hub” syrup producers. This arrangement, which mimics much of the expansion of the maple syrup industry in New England, has the potential to increase the incomes of sap collectors and syrup producers and expand the labor force available to the growing industry.

HIGHLAND VIEW FARM AND WHITE GRASS SKI TOURING CENTER:

In 1907, Lindsey Reed and his family purchased the land that is now Highland View Farm. Sweet Opportunities project’s satellite sap collector Robin Reed Kalog is the third generation of the family to work the land.



Figure 1. Highland View Farm.

Sugaring has historically been part of their farming activities, and the present-day sugar bush takes advantage of Lindsey Reed’s silvicultural practices that favored growing large-crowned, high sugar content maple trees. Robin’s father, Dr. Randall Reed, spent his career as an agricultural extensionist focusing on cattle. It is “Doc Reed” who Chip Chase approached in 1982 about opening a ski touring center. A deal was cut, and the White Grass Ski Touring Center was born. White Grass is well known throughout the East coast and can cater to up to 10,000 skiers in a good snow year.



Figure 2. Large-crowned, highly productive maple trees at Highland View Farm.

THE MAPLE COLLABORATION:

The maple collaboration was born when nearby maple syrup producer Todd Romero, owner of Canaan Valley Maple, bought a reverse osmosis sap concentrator (RO). With his new ability to process more sap, the Sweet Opportunities Team saw the opportunity to foster a maple collaboration. Robin had been interested in maple as a new source of revenue from the farm and had attended the Mid-Atlantic Maple Camp a few years back. However, just as the ski area had to compliment the activities of the farm, the maple operation had to compliment the activities of the skiers.

In the 2020 maple season, the Sweet Opportunities Maple Team worked with Robin to inventory her sugar bush, plan the economics of the enterprise, and assist in the layout of her sap lines. The team also worked with Todd and Chip to make sure that maple syrup added value to the skiing experience.



Figure 3. Canaan Valley Maple.



Figure 4. White Grass Ski Touring Center.



Figure 4. A map of the sugar bush at Highland View Farm.

The first issue that had to be addressed was that the sap lines would have to cross a major ski trail. This was solved with a sap ladder that allowed the sap to flow up a tree to cross the trail at a height of 12 feet, allowing clearance for skiers and trail grooming equipment.



Figure 5. Sap rising vertically in the sap ladder.



Figure 6. Skiers on the trail at White Grass.

Two interpretative signs were created to let skiers know the purpose of the tubing in the woods and the history of sugaring on the farm. With the increased awareness came the opportunity for Todd to sell syrup in the ski lodge. This past season skiers in the lodge could “wet their whistle” after their time on the trails with fresh maple sap, buy food mad with maple syrup, and purchase a bottle of “Canaan Valley Syrup” to take home after their day on the slopes.

TAKE A SKI BREAK AND CHECK OUT THE GAUGES ON THE SAP LINES

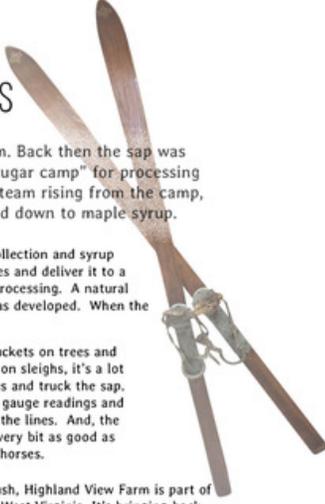
This slope was the original "sugarbush" on the Highland View Farm. Back then the sap was collected in buckets hung on each of the trees and brought to the "sugar camp" for processing with a horse drawn sleigh and later a crawler tractor. Imagine the steam rising from the camp, once located about half-way down the slope, as the sap was boiled down to maple syrup.

There has been a recent revival of the maple industry in West Virginia with new sap collection and syrup processing techniques. The blue tubes on the hillside collect sap from each of the trees and deliver it to a collection tank where it is trucked to a nearby sugar camp, Canaan Valley Maple, for processing. A natural vacuum is developed in the sap full tubes, and the gauges tell us how much vacuum has developed. When the gauge reading drops, we know there is a leak in a line that needs to be fixed.

Although not as romantic as buckets on trees and horses pulling collection tanks on sleighs, it's a lot easier to just check your gauges and truck the sap. However, it is fun to check the gauge readings and to see the sap zipping through the lines. And, the maple syrup produced tastes every bit as good as that collected with bucket and horses.

By reviving this old sugarbush, Highland View Farm is part of the syrup making revival in West Virginia. It's bringing back a practice that was part of West Virginia's mountain heritage. Tapping maple trees is a sustainable use of our forest resources that provides an income for landowners. And, the maple syrup produced from the sap collected provides you with a nutritious, locally produced sweetener.

Time for you to get on with your ski. But, don't forget to stop at the lodge for some maple goodies before heading home.




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HIGHLAND VIEW FARM & THE WHITE GRASS SKI TOURING CENTER

There's something new at White Grass; maple trees tapped, and sap flowing to make maple syrup. At the same time, it's something old, and the continuation of an agricultural/recreational partnership going back years.



"Grandpa Reed had a sugar shack right up that Hill" said Robin Reed Kalog, the third generation on Highland View Farm. Grandpa Lindsey Reed went to work in the woods at 14 as a logger, and a good one who had reputation for being "a magician with an axe." Instead of spending his hard-earned cash at a local watering hole, he called "Loafers Glory," he saved it and in 1907 bought his dream; the farm you are now skiing across.

His son Dr. Randall Reed, a respected beef cattle specialist and Animal Science Extension professor at The Ohio State University inherited the farm in 1966. He was balancing a professional career with managing the farm when in 1981 White grass owner Chip Chase literally skied into his life. The present-day ski lodge and the trail system were built in 1959 and, with a rope tow, run as a ski center until 1967. Chip comes to skiing honestly, check out the picture on the lodge wall of his mother in Vermont. Having run ski centers in Vermont and "White Grass Knob" in Virginia, Chip was out looking for better snow, skied down from the top of the Canaan resort to Cabin ridge and on down to the abandoned lodge. Looking in the windows, the first question to cross his mind was "who owns this place?" Chip had found his snow, and 'Doc' Reed had found his farm hands. That marriage of agriculture and recreation is why the White Grass Ski Touring Center is here today.

White Grass is not a resort, it's a community. Chip describes it as a ski area that is
**"of the skiers, by the skiers,
 and for the skiers."**

Highland View Farm is an active agricultural enterprise, a century old family farm, that farms cattle in the summer and snow in the winter. And now, has brought back the sustainable harvest of maple sap. Sap collected from this hillside is made into syrup by local resident and Canaan Valley Syrup owner Todd Romero. Todd boils it down, and Chip's wife Laurie adds it to many of the goodies served in the lodge.

Enjoy the ski, enjoy the food, and enjoy the beauty of the farm.



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Figure 6. Interpretive signs designed for Highland View Farm and White Grass Ski Touring Center.

The collaboration was topped off by very popular “sugar on snow” parties Todd ran for kids at the ski lodge.



Figure 7. Children enjoying maple taffy, and Todd Romero making the taffy from his Canaan Valley Maple Syrup.

HOW SWEET WAS THE OPPORTUNITY?:

The Sweet Opportunities project expects landowners to be able to pay off their investment in the first year of operation with some surplus. Subsequent years, after paying off the tubing expenses, brings greater income to the satellite sap collectors,

Table 1. The overall sap collection and money made by Highland View Farm for the 2020 sap season.

| Date: | Gallons Sap | Brix (% Sugar): | \$ Value/Gal: | Total Revenue: |
|-----------------|-------------|-----------------|---------------|----------------|
| 2/3/20 | 205 | 2.2 | 0.36 | \$73.80 |
| 2/4 | 170 | 2.4 | 0.39 | \$66.30 |
| 2/5 | 140 | 2.0 | 0.32 | \$44.80 |
| 2/11 | 202 | 2.0 | 0.32 | \$64.64 |
| 2/13 | 175 | 2.0 | 0.32 | \$56.00 |
| 2/18 | 180 | 2.1 | 0.34 | \$61.20 |
| 2/25 | 235 | 2.3 | 0.38 | \$89.30 |
| 2/26 | 155 | 2.1 | 0.34 | \$52.70 |
| 3/3 | 212 | 2.0 | 0.32 | \$67.84 |
| 3/5 | 205 | 1.7 | 0.26 | \$53.30 |
| 3/9 | 265 | 1.7 | 0.26 | \$68.90 |
| Total: | 2144 | | | \$698.78 |
| Average: | | 2.0 | | |

Robin's total expenditures to establish the collection system, including tubing, tree spouts, connecting T's, and collection tank, totaled \$456.52. In the first year of operation, she paid off her collection system and had \$242.26 remaining to put towards her planned expansion next season. Maintaining her existing system in subsequent years by installing new spouts should cost approximately \$20.

Robin put in 86 taps with 3/16-inch tubing that ran all the way to the collection tank. With well over 30 feet of elevation change, the system developed the maximum natural vacuum that could be expected. Because of the large crowns of the trees, the sugar content of the sap averaged 2% brix, and produced 30.5 gallons of sap per tap. The industry averages in West Virginia are closer to 1.5 brix and 25 gallons of sap/tree. So, this was indeed a very sweet, and highly productive, sugar bush.

PROJECT OUTCOMES:

Robin Kalog (Highland View Farm) was able to pay off her investment with money to put towards her expansion plans. She has the capacity to add at least 200 more taps to similarly large-crowned trees. As part of an integrated farming system, her goal is to have the sugaring operation pay her property taxes on the farm.

Todd Romero (Canaan Valley Maple) was able to make an additional 49 gallons of maple syrup with the sap from Highland View Farm. He was able to sell syrup at the White Grass ski lodge and has a good market in the tourist economy of Thomas and Davis, WV. Todd has started producing value added maple products, as well.

He is encouraging Robin to expand. He prefers the high sugar content of the sap coming off Highland View Farm and would abandon some of the less accessible areas he taps if Robin expands and can supply him with sap.

Chip Chase (White Grass Ski Touring) added a new program at White Grass with Todd doing sugar on snow programs for kids. The interpretative signs and the tubing running between the trees add an educational aspect for skiers on the trails. When the sap is running, they can see it crossing on the sap ladder, taste raw maple sap in the lodge, enjoy snacks made with Canaan Valley maple, and take a bottle of maple syrup home with them to remember the experience.

AGRITOURISM AND THE MAPLE INDUSTRY:

On a good year, White Grass can have 10,000 skiers on their trails. With the interpretative signs, these visitors are learning about Highland View Farm and the production of maple syrup in West Virginia. This just may be the biggest, on-farm agritourism enterprise in the state.



LIQUID GOLD

THE MAKINGS OF MAPLE SYRUP

By Todd Romero

As the end of winter draws closer to the vernal equinox, the sun gets higher in the sky and mother nature ushers in another spring season. Folks start making plans for their gardens, digging for early ramps, and swapping out their skis for

boats, bikes, and climbing gear. The transformation from late winter to spring also creates the perfect conditions for prized sap to flow from sugar maple trees. Sugarmakers all over the northeast eagerly collect the sweet sap to transform it into the amber-colored liquid gold commonly known as maple syrup.

If you've ever driven around the rural country sides of the northeast, you've probably seen buckets hanging from trees and blue tubing strung through the forests like a calculated matrix of webbing. These elaborate systems collect ample amounts of sap from the sugar maple (*Acer saccharum*). While these images are commonly associated

Dylan Jones

"West Virginia has more sugar maple trees than Vermont. The abundance of sugar maples throughout our steep hills and hollows is advantageous for collecting sap using nothing but gravity."

with the northeast, we also have an abundance of maple trees and a climate conducive for producing maple syrup right here in Central Appalachia.

To make syrup, sugarmakers start by tapping trees to collect sap. This happens near the end of winter when temperature cycles are ideal for the sap to run, or flow, from the tree long enough to collect a substantial amount. The requisite temperatures for sufficient sap runs are daytime temps around 40°F and nighttime temps below freezing, preferably in the 20s. Pressure is built up during these freeze-thaw cycles, which causes the tree to push sap containing water, minerals, and sucrose to its upper portions. High up in the crown, this sap provides the tree with the resources it needs to start budding in spring. The abundance of sugar maples throughout our steep hills and hollows is advantageous for building tubing systems and collecting sap using nothing but gravity.

The sugar maple is the state tree of New York, Vermont, Wisconsin, and West Virginia. The three northeastern states rank in the top-four maple syrup-producing states in the U.S., and Vermont tops the list with over two million gallons of syrup produced each year.

Although West Virginia has more sugar maple trees than Vermont, the Mountain State produced just 14,000 gallons of maple syrup last year.

That number, however, is on the rise. Several initiatives seek to boost production of maple syrup in West Virginia. Future Generations University in Franklin is working with local producers to harness the latest technologies to increase efficiency and production. Experience Learning, an outdoor education program located on Spruce Knob, runs Maple in the Classroom, a travelling program that fosters youth interest and teaches children how to tap trees and make syrup. The Eastern WV Community & Technical College works with the WV Maple Syrup Producers Association to host Mountain State Maple Days, a showcase for syrup producers. The fourth-annual event is being held on March 21 and coincides with the WV Maple Syrup Festival in Pickens, creating a state-wide celebration of all things maple.

Present-day methods of collecting and processing sap have significantly improved. Sugarmakers drill 1.5-inch holes deep into trees and install spouts (or spiles) to allow the sap to flow into a vessel or a tube system that runs downhill into a collection tank. The

sap is then boiled and concentrated into syrup. It takes an average of 40 gallons of maple sap to produce one gallon of syrup, but just one tap in a tree can produce a few gallons of sap per day. Sap officially becomes syrup when its temperature reaches 219°F (7°F above the boiling point of water). Commercial syrup is tested for density to ensure it is 66% sugar content.

It's extremely easy to make your own little stash of syrup using only your kitchen stove. Although it may take a while, boiling five gallons of sap will produce about a pint of delicious, homemade syrup. On a positive note, you can humidify your home while you're at it!

If you love maple syrup and have access to a few maple trees, try and make your own. It's a fun family activity, and you may get enough of a sugar high to want to make more every year. Or head out to a local market and support one of West Virginia's great syrup producers. This ain't no Aunt Jemima! ♡

Todd Romero runs Canaan Valley Maple from his home in, you guessed it, Canaan Valley.

Maple sap is collected, tested for sugar content, pumped through a reverse-osmosis system, and boiled to become delicious amber nectar.

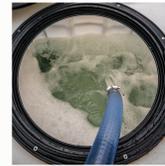


Figure 8. Local news article on Todd Romero's sugaring operation and the agritourism in Canaan Valley, West Virginia.

The Sweet Opportunities Project is supported through the generosity of the Claude Worthington Benedum Foundation. This project advances the Benedum Foundation's strategic priority of economic development based on natural assets.