



West Virginia Maple Syrup Producers Association



July 2017

A Message From Our President

Dear Members,



I would like to begin by thanking Ed Howell, Mark Bowers and Cathy Hervey for their service on the executive committee over the past year and the many people who volunteered their time for committee service. I appreciate your efforts to promote and strengthen our growing association.

The 2017 syrup season was another trying season for most of our members as we dealt with yet another unusually warm winter and spring. Some of you may even be thinking “what are we doing, why are we doing this?” As an old friend of mine often says... “That’s farming!” We can’t control the weather, but we can control our preparation, quality control, and the many small details that go into producing a high quality product like West Virginia Maple Syrup. Even with the 2017 weather we were able to produce over 9,000 gallons of finished syrup, 33% more than producers reported for the 2016 season.

The United States, as a whole, added 6% more taps in 2017 versus 2016. Our great state of West Virginia added 16% more taps this year, which is the highest percentage of any state that participated in the USDA National Maple Survey. These statistics are more than just numbers; they represent family, hard work, and perseverance... all the things that make our state and association so unique. With this in mind, I am excited to envision what we can do and how we can position ourselves within the maple community. There is no doubt that the training and workshops provided by this association have helped to prepare our members to succeed and grow even during these challenging seasons.

Please take advantage of the many services and educational opportunities provided by the association. We know that collaboration and cooperation are the keys to our combined success. If you have questions, suggestions, comments or need assistance, please don’t hesitate to contact me.

Sincerely,

Rich Flanigan
President WV Maple Syrup Producers Association
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2017-2018 Officers

- President**
Rich Flanigan
- Vice President**
Mark Bowers

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WVMSPA Logo

Rich Flanigan

The results are in!! It also gives me great pleasure to reveal the results of the association logo vote. It is exciting to have a logo that we can be proud of and that will identify us.



See You at the Fair

The state fair is quickly approaching and I know that time is a luxury that most of us don't have. However, I would like to ask each of you to volunteer to help with the association booth. The WVDA has been gracious enough to allow us a space to speak with the public in order to promote our products and industry. This will only work with the support of our members. Thank you in advance for your time and helping to ensure that the booth is a great success. Brandon Daniels is coordinating volunteers for our booth. Please contact him to volunteer wvmapler@suddenlink.net or 304-575-7266.

2017 - A Maple Season we will never Forget

Brandon Daniels

The 2017 season was full of surprises and disappointments for most producers in West Virginia and Virginia. We saw record warmth the first 3 weeks of January. The producers that tapped the first part of January paid the biggest price with tap holes drying up before their season got going, resulting in an extremely small crop. The best tapping window was around the last 10 days of January through the first 4 days of February. Producers who tapped in this 14-day window seemed to have the best season, with 3 WV producers reporting their largest crop ever. Two of those high crop producers switched to 3/16 inch tubing, and the third switched 20% of his taps to 3/16 and kept his vacuum pump running on the other 80%.

Syrup production reports varied widely, with producers who tapped in the first part of January, during the hot spell, getting around 20% of a full crop. Producers in lower elevations and along Ohio River were at 35% to 50% of full crop. Their season was short, with nearly all the red maples, and even some sugar maples, breaking bud by the end of February. (This was a first in my 28 years of making maple syrup.) Some producers that tapped during the 14-day "best tapping window" reported making made

from 60% to over 100% of full crop. Success was dependent on the elevation of their sugarbush, with higher elevations experiencing colder temperatures. WV has producers tapping from 600 feet in elevation to over 4,200 feet. This variation allowed syrup statewide to be produced from the January 10th until April 9th.

Dr. Abby's Workshop

Mike Reclin

Anyone who lived through this past sugaring season should be able to tell you the importance of tap-hole sanitation to keeping the sap flowing (see Brandon's articles in this issue). Those of you who attended the WVMSPA's December workshop presented by Dr. Abby Van den Burg, from the University of Vermont's Proctor Maple Research Center, can also tell you WHY.



WVMSPA members are hosted by Ed Hartman at the "Indian Water Maple Company" as part of the December Sap Science workshop presented by Dr. Abby Van den Burg.

The morning consisted of two presentations by Dr. Abby. The first was titled: "The effects of tubing sanitation on sap yields and profits" and the second "Growth rates of trees tapped with high-yield sap collection practices - are current tapping guidelines sustainable?" After a morning of research and numbers we headed out to Ed Hartman's "Indian Water Maple Company" to learn how all this works in the woods.

For those who had not had enough, and maple people never have enough, the workshop was followed the next day by a trip to the Dry Fork Maple Works to see the results of a thinning John Dalen had done in anticipation of expanding his tapping (see "Having your cake and eating it too").

It was a real education having Dr. Abby with us for her lectures, in discussions, and in the woods. And the good news is, with her growing up in neighboring Cresaptown, MD, and with a mother working at Potomac State in Keyser, this is not the last that "Wild and Wonderful" West Virginia is going to see of one of the maple industries preeminent maple research scientists.

Backyard Boiling

Mike Reclin and Tom Hammett

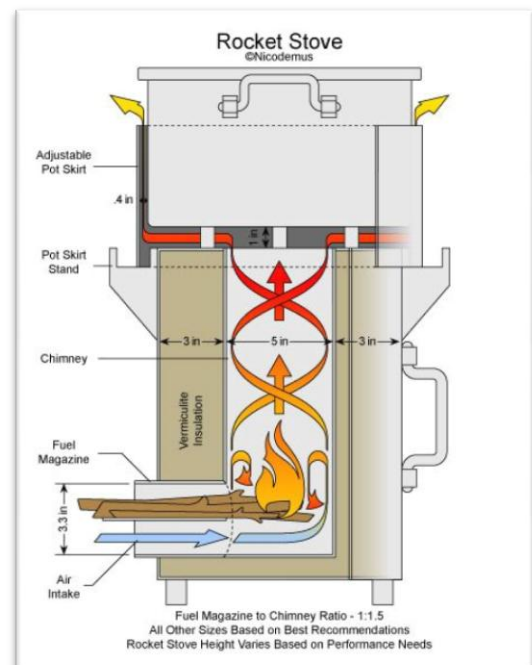
Many maple syrup producers we know started with a few trees and a canning pot on an open fire. Once the sound of the dripping sap and the smell of the boiling got to them they were hooked, and they started looking for more trees and a bigger pot. At this point there is no end to the options for folks to scale up, evaporate sap faster, and make investments on equipment. But, how about that starting point? What are the options out there for the guy just getting hooked?

Working with students in the “Society, Sustainable Biomaterials and Bioenergy” course at Virginia Tech, we decided to test the efficiencies of three commonly used “backyarder” boiling methods as well as an innovative rapid boiling design known as a rocket stove. Rocket stoves use small diameter wood for fuel and have an insulated vertical fire chamber to achieve high efficiencies. This semester-long project gave students the opportunity to research sap and syrup production, visit a local sugarbush, and develop a practical application of their growing knowledge of bioenergy through experiential learning.

Study methods:

In this project we decided to test the evaporating efficiencies of a barrel stove, and open (cinder block enclosed) fire, a propane turkey fryer, and a rocket stove.

In early February, the class discussed the rationale for the project with WVMSPA member Mike Reclin. He introduced students to the basics of the maple syrup industry. The class was then divided into four four-person teams, with each team assigned to test one of the stoves. Each student team researched a different stove design, fuel types (i.e., firewood species, pellets), the maple syrup industry, and various aspects of sustainability linked to maple syrup production. The students each visited a working maple syrup producer during the sap boiling season to learn first-hand about a typical maple syrup operation.



By early April the teams were ready to assemble the materials and run a test on their assigned boiling method. A commercially available rocket stove was borrowed for the tests. A retail available turkey fryer was purchased locally. And, the campfire and barrel stoves were constructed from materials available at the lab. Since the maple tapping season had finished for the year, we used water instead of sap during these tests. Because of the time constraints of an academic term, only one test of each method was conducted.

The study design was pretty simple. Each team was to record the time it took to bring their boiling method from a lit match to a roiling boil. They were then to maintain a rapid boil for 30 minutes and determine the amount of water evaporated by subtracting the remaining volume from an initial known quantity. Along the way students kept records on the weight of wood or propane burned, from which they subtracted the weight of charred wood and ash remaining in the combustion chamber or the weight of the propoane tank at the end of the boil. The experiment used dried Tulip Poplar (*Liriodendron tulipifera*) as a fuel source. While this was arguably not the best species, it was readily available in small dried pieces for use in the rocket stove and we needed to use the same species for all wood fired tests.

The differing designs did not allow us to control for surface area or depth of the boiling liquid. The barrel stove and the open fire boiled in a 16-inch by 22-inch flat pan, whereas the turkey fryer and the rocket stove used 12 inch and 10.75 inch circular pots respectively. Initial volumes were 14 quarts for the barrel stove and open fire, and 10 quarts for the turkey fryer and the rocket stove.

Results:

	R ocket Stove	B arrel Stove	O pen Fire	T urkey Fryer
Evap. rate, qts./half hr.	.5	.5	.7	.3
Minutes to full boil	2	6	2	0
Fuel burned in pounds	.8	4.8	8	.6 *
Efficienc y %	4.8	.5	1.8	9.8
Evap. rate/ qts. sq. in.	.061	.013	.020	.027

* pounds propane

Discussion:

The results of this project are given in the table above. Of the four types of stoves, the rocket stove is new to the backyard production of maple syrup. “Backyarders” have for years been using open fires, barrel stoves or turkey fryers to evaporate sap.

The first surprise in the results is that the open fire out-performed the barrel stove. The barrel stove, with its more contained fire would be expected to boil more sap quicker, and generally we believe that would be the case. The reason for the opposite in this case is the operation of the two. The student crew assigned to the open fire built a fire close to the bottom of the flat pan, erected wind blocks, and did an excellent job of keeping the fire at maximum burn. The crew working with the barrel stove was less conscientious, allowing the fire to subside a number of times during their trial.



Virginia Tech. student Michelle Lipka monitoring the Rocket Stove

All in all, the rocket stove outperformed the other stoves in this trial. It brought the water to a full boil in 12 minutes, consumed much less wood, only 4.8 pounds, with a much greater efficiency. Although the rocket stove evaporated less water in the half hour trial than the open fire (properly tended) it did it with a much smaller pot. The rate of evaporation on any evaporator is related to the surface area directly exposed to the heat. The round pot on the rocket stove had only 91 sq. in. of direct contact with the flames, whereas the rectangular pan used on the open fire and barrel stove had 352 sq. in. exposed to the flame. This gave the rocket stove an evaporation rate of 0.061 quarts per sq. in. versus the 0.020 rate for the open fire.

The barrel stove and the open fire used far more wood than the rocket stove, but had a correspondingly larger pan bottom area to heat. Even though the open fire boiled more water away in the half hour test, it did it far less efficiently and at a smaller rate per square inch of bottom area.

The propane turkey fryer is a common choice for many first time backyard producers. It certainly is the easiest way to evaporate sap. However, of all the options tried it is also the slowest, evaporating only 3 quarts in the half-hour trial. That means it would take almost 27 hours of boiling to make a gallon of syrup with 2 percent sap. The turkey fryer used 1.6 pounds of propane to evaporate those 3 quarts, meaning it would take 85 pounds of propane to make a gallon of syrup. At approximately \$1/pound, you will have spent all night and \$85 to make maple syrup you can purchase at the store in far less time and for a mere \$50.

Conclusions:

Although this is only one trial, and repeating the project would certainly refine the numbers, the study did point to some preliminary conclusions. First, we can see the importance in any wood fired evaporator of keeping the fire stocked. A barrel stove should, when properly fired, should outperform an open fire.

The other important conclusion that can be drawn from this study is the value a rocket stove could provide backyard syrup makers. The low amount of wood consumed, the efficiency achieved, and the per square inch rate of boil all point to a stove technology that could really work for the backyard producer. The key to reaching that goal will be to design and build a rocket stove that specifically for sap evaporation.

Stay tuned all you backyard maple makers, for next year's class project, where we plan to design, build and test the "Rapid boil Sap Rocket." For more information about the class and this project, please contact Tom Hammett at 540-231-2716 or himal@vt.edu.

To Inspect or Not To Inspect?

That is the Question.

As those of you who read this issue of The Maple News know, this poor guy in New Hampshire put up with a 2-day grueling ordeal at the hands of the US FDA. Why? Because he is making maple syrup. And, maple syrup is a food product. But we all know maple syrup is safe, with too little free water to support the growth of harmful bacteria. Right, as long as it's 66 Brix. Anyone care to guarantee that all maple syrup produced in West Virginia is 66 Brix?

The fact is that people in this country expect their food supply to be safe. The fact is also that not all of it is. In 2016 there were 764 food recalls. As long as that is the case, the FDA could come knocking at your door.

No one likes inspections, especially FDA inspections that take 2 days of your time. No one can guarantee that won't happen. But, we can assume that by "getting out ahead of the curve," we can reduce the probability of it happening. The Feds tend to leave places alone when they can show that they have their own house in order.

With that knowledge, and with a stated policy of "educate don't regulate" the WV Dept. of Agriculture has initiated a sugar camp facility review process. The process is still a bit clumsy and needs to be streamlined, but with each review completed it has gotten better. Five camps have gone through our State

review process. None of those camps have failed the review process. Sometimes it has resulted changes in operational procedures, but always to make things better. In all instances it has resulted in that camp becoming certified, which at times has opened them to new markets.

So, support the process by contacting Cindy Martel at the Dept. of Ag and scheduling a review. It's much preferable to greet the friendly face of the WV Dept. of Ag, than the FDA folks from D.C.

Sugar Camp Feature - Blue Rock Farm

Jeff DeBellis

Don Olson and Linda Zimmer produce certified organic maple syrup on their property in what they like to call "suburban Blue Rock." The Town of Blue Rock is a collection of a few houses and a church on a bend in the road between Mill Creek and Helvetia in the southwestern part of Randolph County. Blue Rock is on one side of the mountain. Don and Linda are on the other.

As one drives over the mountain from Blue Rock, they'll notice the characteristic translucent blue tubing strung from trees along the side of the road. It flanks the road for a few hundred yards, then descends down a steep hillside to the west. It collects into larger trunk lines and ends at a small collection of neatly built shacks. The largest of these shacks holds the evaporator and a few other machines and supplies. Another one is just large enough to hold a reverse osmosis machine. There's also a woodshed. Sandwiched among these are two large holding tanks. This is where Don spends most of February, doing the various jobs necessary to turn maple sap into finished syrup.

On this particular weekend near the end of February, the evaporator sits dry and quiet. Record high temperatures put an early stop to the sugaring season. "Maple syrup producers in West Virginia are the canaries in the coal mine when it comes to climate change," Don says. It's a reference to the fact that West Virginia is at the southern edge of where the conditions are right to produce maple syrup. A few degrees warmer, and the nascent industry would be gone from the state before it really took off. "Last year was the worst year so far," he continues, "until this one." There are four barrels (about 100 gallons of syrup) sitting in the corner of his sugar house. That's his entire yield for the 2017 season.



Don Olson; singer, musician and syrup maker, ready to "Rock and Roll" with Maple at the Blue Rock Farm.

In his best year (2014), he got four times as much.

Don and Linda began making syrup on their seventy-five acre Blue Rock Farm in 2009. “The previous landowner had grazed sheep and cattle until he got too old. Then he just let the land grow up around him,” Don recalled. The land had been dormant for years before Don and Linda purchased it. Most of the fields were grown over with saplings. When Don realized that many of the saplings were sugar maples, he began to manage it as a sugarbush. He cut out the other tree species and thinned the sugar maples so that their leaf crowns had more space, could absorb more sunlight, and therefore the trees would produce more sap. He now taps 1,500 trees in total, doing it while they’re still frozen so that he doesn’t miss the first run.

The West Virginia Maple Syrup Festival happens the third weekend in March in the town of Pickens – just twelve miles from Blue Rock Farm. Don and Linda open their sugar camp for the festival, give tours, and sell some of their syrup to visitors. Most of it though, they sell to the Greenbrier Resort in White Sulphur Springs. The connection with the Greenbrier began with a puppet show that Don and Linda put on one Christmas. Linda, a puppeteer, and Don, a musician, put on the show for guests at the resort. They brought along a jar of their syrup to give to one of the chefs. That chef brought it to the head chef and the head chef called the next day. He wanted to buy all the syrup they had.

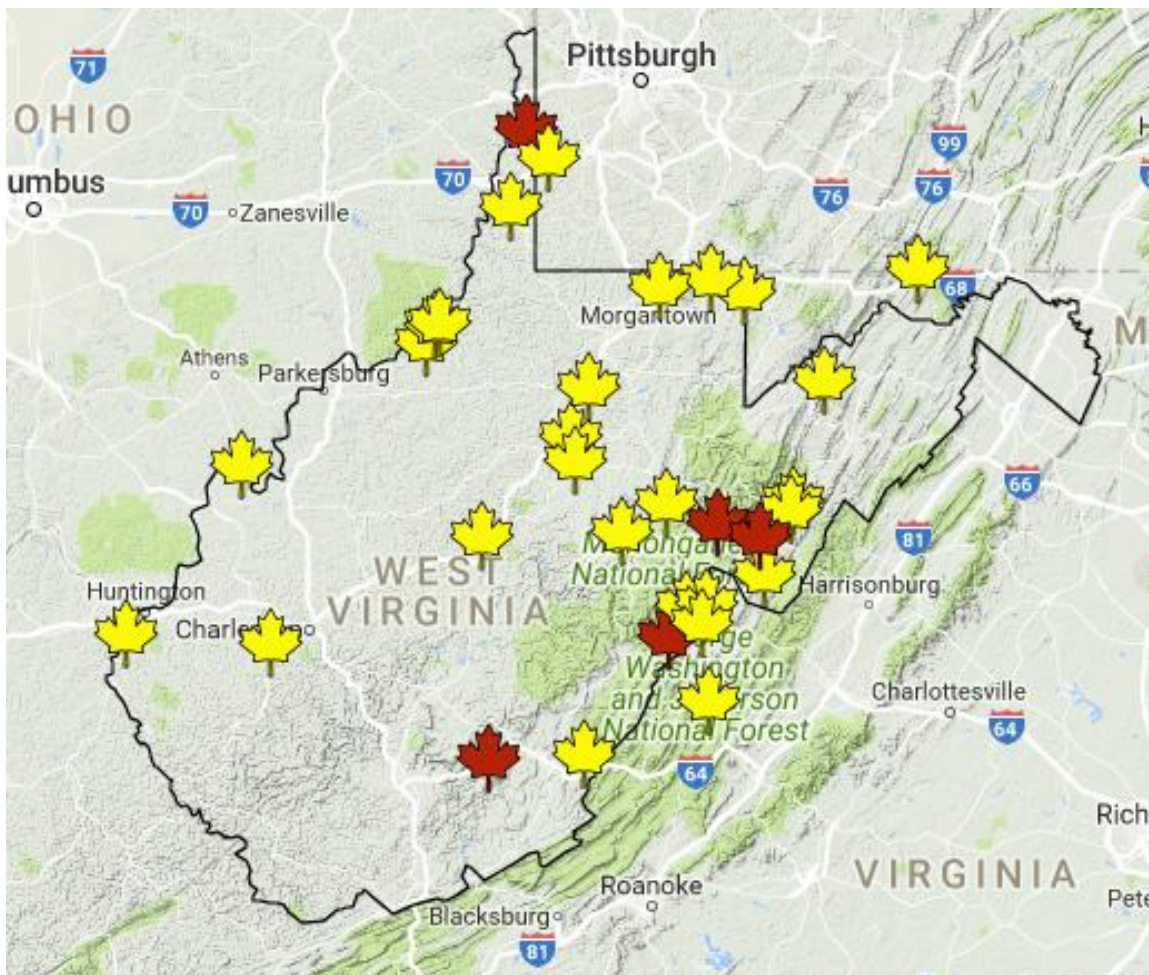
The Greenbrier sources syrup from other local producers for different purposes. They save Don and Linda’s exclusively for cooking gourmet meals in their high end restaurant. Don isn’t sure why the Greenbrier prefers their syrup over the others. “*Terroir*,” he shrugs, using a French word that’s often used to describe the soil, climate, and other localized elements of an environment that give each wine its distinct flavor. In *The Maple Sugar Book*, Scott and Helen Nearing wrote, “every bush, and possibly every tree, differs radically in flavor. A real connoisseur can taste these fine differences and can even sometimes tell from which bush the syrup came.” Whatever it is, there’s something special about the syrup from suburban Blue Rock.

Editorial note: In each issue of the WVMSPA newsletter we hope to feature a different West Virginia sugar bush, as a way of getting to know our fellow syrup producers around the State.

**NASS Survey 2017 - We're Growing
West Virginia Maple Syrup Production Charleston**
WV Dept. of Ag Press Release

Maple syrup production totaled 9,000 gallons in 2017, up 3,000 gallons from 6,000 gallons produced in 2016. Number of taps was 61,000, up 10,000 taps from 51,000 taps in 2016. Yield per tap was 0.148 gallons, this is up from the 2016 yield per tap of 0.118 gallons. On average, the maple syrup season opened on February 3, 2017 and closed on March 7, 2017. The average season length was 32 days. The first date sap was collected in West Virginia was January 5, 2016. The last date for sap collection was April 10, 2017. Average price per gallon was \$48.40 in 2016, and the value of production was \$290,000. Price by type of sale and size of container was withheld to avoid disclosure for individual operations in 2016, except for pints, at \$8.70 per pint in 2016. Bulk prices in 2016 were \$2.80 per pound and \$30.30 per gallon. Percent of sales by type in 2016 was 48 percent retail, 6 percent wholesale, and 46 percent bulk. Estimates for West Virginia began in 2016, no data for 2015 are available. For more information about this or other NASS reports in West Virginia, please visit https://www.nass.usda.gov/Statistics_by_State/West_Virginia/.

Turning Your Yellow Leaf Red



Check it out at:

<https://www.google.com/maps/d/viewer?mid=17JFazuIrSMNXjaL9lr4B0aYkUml&ll=39.49397372083572%2C-80.2997588953125&z=8>

This link takes you to an interactive map of all WVMSPA members. Click on a red leaf and you'll gain additional information about that camp. The plan is to "go live" this summer with this map through the Dept. of Tourism's and the Dept. of Ag's websites. If you are interested in selling maple syrup, it does not hurt to let people know how to contact you. If we're interested in promoting maple syrup as a West Virginia agricultural product, it does not hurt to let the public know that maple syrup producers exist in our State. WVMSPA member Jeff DeBellis is our map master. To turn your yellow leaf a clickable red, send a short description of your sugaring operation and a few photos to: debellis.jeff@gmail.com.

Maple Confections 101 and 201

Rachel Taylor

The WVMSPA is excited to host Jake Moser from Croghan, New York, as class instructor, in a maple confectioners workshop this coming July. Jake, along with his 2 brothers operate Moser's Maple. Although Jake helps with all aspects of their maple operation his specialty is confections. He took over the candy-making part of their business more than a decade ago from his mother. Since then he has built up a year-round business and the majority of their families syrup gets transformed into value added products.

Jake has built up a large web-based clientele and ships his candy all over the world via ebay. He also developed what became the first trademarked hard maple candy in the United States: Maple Mini's. Jake serves as president of the Lewis County Maple Producers Association and a long-time board member at the American Maple Museum in Croghan.

Mr. Moser also spends a lot of time helping and advising other maple producers. He has taught numerous classes on how to make and market value-added maple products at industry events throughout the northern United States and into Canada. We are very happy that soon he will be adding **West Virginia** to that list.

Friday July 28th 9AM-3PM - Maple Confections 101 - Learn or refresh on the basics of hand-making small batches of maple candy, cream, sugar and lollipops. How to choose the best syrup to make your products and how to achieve varying desired results.

Saturday July 29th 9AM-3PM - Maple Confections 201 - Quick review of 101 first thing and then on to more details. Learn more advanced techniques for confection

making, how to avoid common mistakes, and learn about different machinery used to make different confections. Become more confident in making larger batches successfully.

This program is supported by the WV Dept. of Ag, through a Specialty Crop Block Grant. A daily \$15 fee will be charged at the door to cover lunch. Space is limited for this “hands-on” workshop, so register NOW at goo.gl/r3qdG7 or by contacting Rachel Taylor at frostmorefarm@gmail.com

Fred Hervey with his “Next Generation” finishing pan, and Rachel and Adam Taylor with their “Next Generation Syrup Maker.”



“Having Your Cake and Eating it Too?”

Mike Reclin

An old adage goes: “You can’t have your cake and eat it too.” It is meant to tell someone that they can’t have two good things that normally don’t go together. Like, if you cut down some of your trees, you can’t collect as much sap. That seems logical. However, with forestry properly practiced, and if you take a long term view of your sugaring operation, you just may be able to “have your cake and eat it too.” Here’s how.

Let’s say that the first of the two good things (having your cake) is getting lots of sweet sap. The literature says that properly managing a sugarbush can double per tree sap yield, and increase sugar content of the sap. This past year sugar content in West Virginia was almost universally reported as being low. While a sugar content of around 1.3 Brix was common for many producers, Cathy and Fred Hervey, *Family Roots Farm*, reported getting 2.3 Brix on an area they tapped that has been thinned regularly, resulting in trees with nice full crowns. They also said that the sap collection bags in that particular stand provided way more sap per tree than did their more densely spaced trees on

tubing. Ronnie Moyers, *Laurel Fork Sap Suckers* has been managing part of his sugarbush for the past 15 years, and sees similar results.

Now the second of the two good things (eating it too) would be the value of the products obtained by cutting your trees. It's the income from the sale of forest products —saw logs and pulpwood— or the firewood for heating your home or fueling your evaporator.

In this article we are going to see how you can get both, and maybe even pay for the expansion of your tubing system into that patch of now well-managed forest.

In October 2014, the WVMSPA hosted a workshop titled *“Preparing Your Woods for Sap Collection”* at the *Dry Fork Maple Works*. The workshop included in the woods sessions on forest management by Jamie Schuler, Silviculturist from WVU, and tips on tubing installation and economics by Mike Ferrell, from Cornell University’s Uihlein Maple Research Station. As part of that program trees in a small demonstration area were marked in a way that, if cut, would encourage the growth of those left, increasing crown size which leads to more and sweeter sap. Last fall, *Dry Fork Maple Works* owner John Dalen and I extended that marking over a 7-acre area. Over the summer John thinned the stand.



A load of firewood leaves the Dry Fork Maple Works

Using common forestry metrics of Trees/Acre, Basal Area, and Average Tree Diameter, Figure 1 compares the original stand with a post-thinning inventory. Figure 2, a stocking guide, provides a graphic display of that data along with a conceptual framework on which to plan and evaluate the thinning.

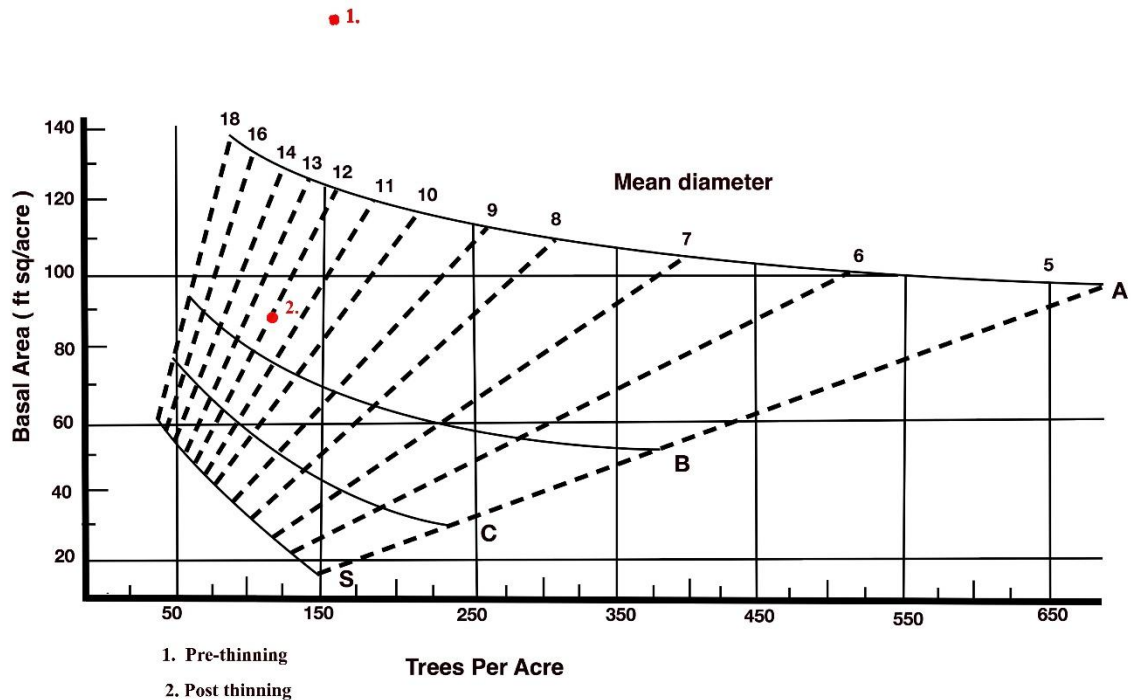
Figure 1.

Metric	Original Stand Inventory	Post-harvest Inventory
Basal Area*	170	88
Trees/acre	162	121
Ave DBH**	12 inches	14 inches

* sq. ft./acre

** measured diameter breast high

Figure 2. - Stocking Guide



“Having your Cake” – increased sap volume and sweetness

Figure 1 shows that John tended to cut smaller trees, increasing the average diameter of the remaining trees from 12 to 14 inches. He removed weak and crowded trees, reducing the density of the forest from 162 to 121 trees/acre, and the Basal Area from 170 to 88 sq. ft./acre. This gives the remaining trees more light, water and nutrients, allowing them to grow faster while also increasing crown size. John also favored maple, but left some other species to maintain diversity.

The stocking guide, Figure 2, provides a scientific forestry context. Anything above the “A” line represents a stand that has too many trees for optimal growth. John’s original stand, by plotting trees/acre and Basal Area, is represented by the number 1. ; sitting way above the “A” line. The “B” line on the guide represents stands that have proper stocking. Which, along with proper spacing, allows trees to obtain optimal growth. John’s post- thinning inventory, represented by number 2., shows that the stand is just about where it should be for future growth to give that increased sap volume and sweetness.

“Eating it too” - the sale of forest products

In this operation John cut his own trees, splitting the revenues with a skidder operator who moved them to the landing where they could be sold. John’s share of the revenue was approximately \$850/acre, or \$5,950 from the 7-acre tract, while at the same time increasing forest growth and health. Obviously, your local market conditions will dictate your timber’s value. Ronnie Moyers commented that depending on location, a landowner should expect to get 50 – 55 % of the revenue from the sale of sawlogs, and \$2-4 per ton from the sale of pulp and firewood.

With all this talk about desert, let’s end this article with another old adage, by putting a little “Icing on the Cake.” John’s thinned forest has an average of 60 tapable trees/acre, or 420 potential taps on that 7-acre block. Brandon Daniels (our CDL representative) estimates it would cost \$3/tap, or a total of \$1,260, to install a 3/16-inch tubing system on that 7-acre site. In this instance the thinning can more than cover the costs of tubing installation.

Assuming a conservative yield of 0.25 gallons of syrup per tap, this 7-acre area has the potential to produce 105 gallons of syrup. And, as the trees grow into that space provided them increasing sap sweetness and yield, that number will only grow.

How’s that for “Having your cake and eating it too?”

Re-drilling Tap Holes Makes a Difference

Brandon Daniels

For me, some of the most exciting news to come out of the 2017 season was the results of a “re-drilling” experiment I did with four other producers. Dr. Mike Rechlin and I had discussed several times during the last year the importance of adapting sugaring practices to conditions in our more southerly region of syrup production. Climate, soils, and weather patterns in West Virginia and Virginia are very different from those of our fellow syrup makers in New England. I was able to get the ball rolling on this research. This year’s early season warm spell, resulting in microbial growth in tap holes, presented the “perfect” opportunity to try something different. The results were shocking.

After the warm early season weather, March returned to fairly normal temperatures. Even with this good sap weather, producers I talked to were experiencing low sap flows, with some stopping completely by the 10th of March, even after freeze – thaw cycles on previous days. With nothing to loose, this provided an opportunity to do something different. We decided to pull taps and re-drill our holes. There isn’t enough room in

this article to cover all we discovered. What is presented below are some of the amazing numbers and brief details.

To maintain anonymity, collaborating producers will not be named. The results from my sugarbush are listed as Producer # 1.

Re-tapping procedures:

Study producers initially drilled 1.5" tap holes, drilling an additional .5" deeper on the re-drill, thereby exposing new sapwood. As we address the findings below, remember we had a week in the middle of February in which we had 9 days with temperatures ranging from the 50's to above 80 degrees, without a significant freeze up.

Experimental results:

Producer # 1: This sugarbush is comprised of 5 different properties, all on 3/16 in tubing, designed to create a natural flow vacuum. Fifty percent of the taps are on north facing slopes and the other 50 percent are on west, east and south facing slopes. Our first boil was February 4th and the last was March 25th. During those 52 days, there were 27 days with temperatures above 50 degrees, with many days above 60 and 70 degrees.

The bush was initially tapped between February 2nd and February 10th. The south, east and west facing were re-drilled between March 10th and the 13th. These re-drilled taps ran an average of 1.2 Gallons/tap (GPT) within 8 hours on the afternoon the 13th. During this afternoon while re-drilling several hundred south slope taps, they went from hardly running at all to a very heavy sap flow.

This inspired me to re-drill everything on the north side during the next 4 days of freezing temperatures. The deep freeze lasted from the evening of March 13th until March 18th. From nightfall on March 18th until the morning of March 25th, we had 2 very small freezes and produced 7.3 GPT. With what we had to dump to keep sap quality as high as possible, we produced close to 9 GPT in 6.5 days. With this additional sap we produced approximately 25% of our normal syrup crop. Although anything but great, the re-drilling saved us from a potentially disastrous season.

Producer # 2: This producer put in 1,000 taps, with 800 on 3/16 and 200 on a small vacuum pump. The bush was tapped on January 27th and 28th. From then until March 17th they produced 200 gallons of syrup. By March 17th his tap holes had almost completely dried up. After re-drilling, he made another 60 gallons of syrup before the end of his season on March 25th.

Producer # 3: This producer put out 2,900 taps, 2,800 of which were on a vacuum pump. The bush was tapped between January 20th and the 22nd, and produced over 700 gallons of syrup by March 10th, when the sap flow completely stopped. He re-drilled between March 10th and the 13th, after which he produced another 300 gallons of syrup.

Producer # 4: Producer #4 tapped out on February 3rd. From that tapping date until March 8th he got 22.27 GPT on 3/16 tubing. No sap ran from March 8th to the 22nd, in spite of some good freezes and thaws. He re-drilled 200 tap holes on March 21st, and in 96 hours had an additional 7.55 GPT.

Producer # 5: This final collaborating producer had 4,100 taps, all on mechanical vacuum. He tapped out between February 10th and the 13th. On March 25th, with the

temperature around 75 degrees, he re-drilled 200 tap holes and the flow rate increased from 75 GPH on his 4,100 taps to 270 GPH on the 200 holes re-drilled holes.

What did we learn from this study?

1. Re-drilling ½” deeper is quick and easy. Producers can average around 100 taps per hour.
2. Due to the extreme hot weather we had this year, a lot of the tap holes and spouts had a large chunk of yeast in them. Re-drilling allowed this to be removed from the tap hole by slapping the spout and drop line against the tree.
3. All of the post re-drilling syrup produced was table grade. Removing the yeast chunks helped reduce contamination of the sap, keeping the grade up.
4. Re-drilling should allow producers to tap earlier to catch the earlier runs, and re-drill if holes slow or stop later in the season.
5. Initial tapping depth should be around 1” for tress less than 12 inches, and 1.5” for larger trees. This will allow the producer to re-drill ½” deeper.
6. For maximum yields producers can consider re-drilling about 70% through the season.

As we move into the future, we will continue to look at ways to increase production, especially when nature doesn't cooperate. If we could have gotten several more days of freezing and thawing I feel certain the tap holes would have continued to produce a lot more sap and the production numbers would have been much higher. We will try to look at this re-drilling issue more in-depth in future seasons and to document how re-drilling can make a difference in different years.

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Sweeting up those West Virginia Vets

1747 Morris Branch Road, Dawson, WV 25976
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Now I would not want to infer that our proud West Virginia Veterans have a reputation for having somewhat of a crusty disposition, but when James McCormick, Director of the WV Dept. of Ag's Veterans and Warriors in Agriculture Program reached out to the WVMSPA, we figured they just needed a little sweeting up.

Having worked with James in the past, WVMSPA Board member Mike Rechlin immediately responded to their call for help. With the full support of Department of Agriculture Commissioner (and WV veteran), Kent Leonhardt, plans soon developed for a statewide program to encourage maple industry entrepreneurs. “The maple program will be a new and exciting addition to a suite of veterans training programs being developed within the Department,” said McCormick.



WVMSPA President Rich Flanagan instructs while WV Dept. of Ag. Commissioner Kent Leonhardt taps his first, but not his last, maple tree.

Although designed with the needs of veterans in mind, the program will be open to anyone with an interest in West Virginia maple syrup and maple products. The program will begin with a free and open to the public, four-hour seminar on maple syrup in West Virginia. Seminars are planned for multiple locations around the State. Those attending any one of these seminars will then be eligible to enroll in a “Maple Sap and Syrup Production” certificate course offered by the Dept. of Agriculture in partnership with Future Generations, a local educational institution. To be taught by Mike Rechlin, the certificate course will be presented in a series of on-line synchronous sessions along with two full weekend (Saturday and Sunday) field practice sessions. To complete the certificate requirements, participants will then intern for four sessions with a local syrup producer, gaining experience in tapping, sap collection and line repair, sap to syrup processing, and product presentation and marketing.

Details of the program are being developed over the summer. The maple seminars are being scheduled for September and the first week of October, with the certificate course scheduled for later in October. We will be notifying WVMSPA members once the dates and locations are firm, and hope to see many of you at the seminar sessions. As the certificate course develops we will also be reaching out to producers willing to work with program interns.

Those of us in this industry just love maple, and as WVMSPA members we look forward to sharing that love with our West Virginia veterans, and others, as a way of showing our appreciation for the contributions they have all made to our State and our Country.

Sweet Sorghum – There’s More You Can Do With Your Maple Equipment *Britney Hervey Farris*

In 2015, Family Roots Farm was introduced to a West Virginia Specialty Crop that uses much of the same equipment we use when producing maple syrup. What you may be wondering, Sweet Sorghum. Sweet Sorghum is 100% all natural syrup made from natural juice extracted from sorghum cane. It is different from molasses as molasses is a byproduct of the sugar industry whereas sweet sorghum is all natural syrup just like maple syrup!

Sweet Sorghum is grown exclusively for syrup making in the south-eastern United States. Native to Africa, Sweet Sorghum was introduced in 1853 to the United States as drought-resistance, heat-tolerant member of the grass family. Sweet Sorghum is fairly easy to grow. We direct seed 6" apart, on 36" rows just as if we were growing corn. Planted in May, we cultivate throughout the Summer months and harvest in the Fall.

Upon harvest, a corn binder is handy to have to cut down the stalks. Once leaves are removed from the stalks the Sweet Sorghum is ready to be extracted. On our farm we use a 1860's mill to press the juice from the cane stalks. A bright green juice is captured and you are soon ready to make Sweet Sorghum.

Processed very similar to maple syrup, the juice from the cane is boiled until it reaches 78 to 80 brix. (226-230°F) Unlike maple syrup, while boiling you must skim the green foam off to prevent a bitter taste. Sweet sorghum does have its advantages over maple syrup; one you can control your harvest and processing time by your plant date, two the juice extracted from the cane has a very high sugar content. It takes 6 to 12 gallons of raw juice to make 1 gallon of sweet sorghum.

As a maple producer what does sweet sorghum do for us? Rather than our evaporator and other maple equipment sitting there all year, we use it twice a year. By diversifying your operation, it enables you to expand your market and provide extra income with little start-up cost.



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**West Virginia Maple Syrup Producers Association
Membership Application**

Purpose:

“The purpose of the West Virginia Maple Syrup Producers Association is to promote, educate, and research the maple and other tree syrup as well as value-added syrup products throughout West Virginia.”

Membership:

“Membership is open to persons interested in maple or firms engaged in any phase of producing, processing and/or marketing maple syrup, and/or tree syrups and value-added products of maple syrup and other tree syrups.”

We invite you to join with us as we learn and promote our industry.

Name: _____

Farm/sugarhouse name: _____

Membership category (check one):

_____ West Virginia members. (With full voting rights).

_____ Associate and Honorary members. This category is for friends from other states who want to join our organization. (Without voting rights)

_____ I give permission for my contact information to be shared with paid members.

Address:

Phone number:

Cell phone number:

Email address:

Annual dues: \$25 – includes a subscription to the Maple Syrup Digest, a quarterly publication of the North American Maple Syrup Council.

Complete application and submit with your annual dues of \$25 (make checks payable to WVMSPA) to: Cathy Hervey 100 Fernwood Drive, Wellsburg, WV 26070

West Virginia Maple Syrup Association
100 Fernwood Drive
Wellsburg, WV 26070