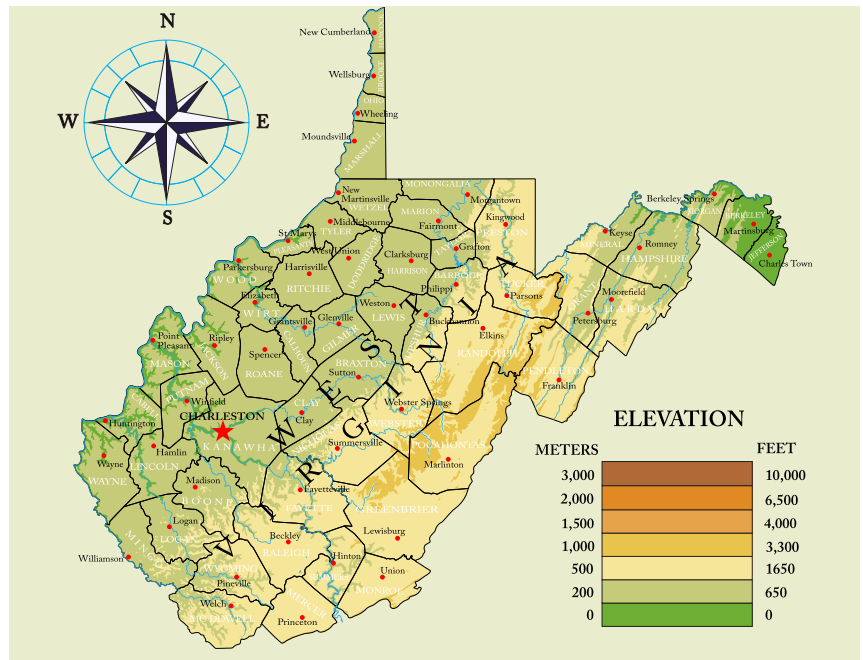




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## Acer Access in West Virginia



The USDA Agricultural Marketing Service administers the Acer Access and Development grant program. The program began in 2017, with the West Virginia Department of Agriculture as an early grant recipient. The concept behind support for the maple industry was first introduced into congress in 2011 as the “Schumer Tap Act.” It is that funding mechanism that WVMSPA founding President Mark Bowers “got wind of” and the opportunity to participate in the program led to the founding of the West Virginia Maple Syrup Producers Association (see accompanying lead article from the WVDA Farm Bulletin).

The purpose of the Acer access program is to: *“support the efforts of States, tribal governments, and research institutions to promote the domestic maple syrup industry.”* Seventy percent of the maple syrup consumed in the USA comes from Canada. Yet we have an “untapped” domestic maple resource and the opportunity to grow our national supply of syrup while supporting the economic development of rural communities. Congress recognized that opportunity, and earmarked funds for that purpose within the Farm Bill.

Acer Access funds programs, *“designed for the promotion of research and education related to maple syrup production; promotion of natural resource sustainability in the maple syrup industry; market promotion for maple syrup and maple-sap products; encouragement of owners and operators of privately held land containing species of trees in the genus Acer to initiate*

*or expand maple-sugaring activities on the land; or to voluntarily make the land available, including by lease or other means, for access by the public for maple-sugaring activities.”* In short, all things good for maple.

West Virginia is a state with plenty of that “untapped” maple resource; after all Sugar Maple is our state tree. West Virginia has a growing maple industry and, as Mark duly pointed out to WVDA, a committed group of maple enthusiasts who, at that time, would soon organize a maple syrup producers association. It is that combination of opportunity and collaboration between our educational and research institutions, WVDA and WVMSPA that has made West Virginia so successful

in securing Acer Access funds to advance our sap and syrup industry. This newsletter is dedicated to letting you all know what has happened with the USDA Acer access grants we have received, and what to expect as these grant funded programs progress.

GO MAPLE,  
Mike Rechlin

*“Funding for Acer Access projects described in this newsletter was made possible by the U.S. Department of Agriculture’s (USDA) Agricultural Marketing Service through grants. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.”* ❁

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## The Notebook: Making Maple in the Mountain State

Reprinted with permission from the WVDA Market Bulletin Vol 107, No.2, February 2023

It all started with a notebook. For years, Mark Bowers, of Bowers Maple, had been collecting names of maple syrup producers in West Virginia, tips, and tricks about the maple-making process he learned from the “old-timers” and ways to create some sort of maple organization within the state. All those ideas were written down in a notebook. “In my notebook, I had about 50 names of people making maple syrup in West Virginia. It was broken down by counties,” explains Bowers. “I did research and wrote it all down. I would visit other producers and learn from them and write it all down. I saw what was going on in other states and wrote it all down.”

The notebook is now a bit of legend with the members of the West Virginia Maple Syrup Producers Association (WVMSPA). They can’t remember a time Bowers didn’t have his notebook in tow. “I was never quite sure of what was in there,” laughs Cathy Hervey of Family Roots Farm, one of the founding members of the WVMSPA. “But good things came from it!”

Bowers says maple syrup has been a part of his life as long as he can remember. “My father, as a



child, made maple syrup in the 40s in Pendleton County. They did it the old way with buckets and cooking the sap in an old kettle over an open fire,” he recalls. “About 24 years ago, Dad was at a farm auction in Highland County, Virginia. He bought a bunch of pipes and old tubing for practically nothing. All the sudden, he had it hooked up in his backyard and said he was going to tap his maple trees. I had no clue what he was doing. Pretty soon, we were collecting 250 gallons of sap from those lines, and it became a big family event.”

Eventually, Bowers was the only one left in his family making maple syrup. He would consign a few bottles of his syrup and maple candy to a couple of stores, but he felt there was real potential to grow a maple industry in West Virginia. In 2014, he got out his notebook and started calling maple makers across the state he thought might be interested in joining some sort of maple organization. He also contacted the WVDA to see if they would send a couple folks to sit in and listen. In July of that year, a handful of people gathered in Weston for what would be the first meeting of the WVMSPA.

"It was a three-hour meeting," recalls Bowers. "We heard from the WVDA folks on the benefits of starting an association. Then I stood up for about two and a half hours and never shut up. I had all these notes of things that could happen if we created an association." Hervey was at that first meeting. "We had started making maple syrup as a family in about 2002, but it wasn't a business. We heard about the maple meeting from a friend, and he invited us to go," she says. "There were about 20 people there. I remember meeting a lot of people who were so passionate about maple syrup like we were. The folks from the WVDA were there, but Mark did most of the talking. We decided to share ideas and collaborate."

That core group agreed to meet again and invited more maple producers. "It was at our second meeting when we elected officers and officially became an association," recalls Hervey. "Mark was elected president, and I was elected secretary/treasurer. We decided to collect dues to get things going - \$25 a sugar shack."

The members determined what they really needed was some maple knowledge. "We definitely needed the educational piece," says Hervey. "We had been going to Ohio to attend their maple meetings and workshops." The Association applied for and received a Specialty Crop Block Grant in 2016. They used that money from the USDA to hold a Mid-Atlantic Maple Camp at West Virginia University. The four-day event drew maple makers from seven states, but the bulk of the attendees were members or future members of the WVMSPA. Nationally recognized maple experts Les Ober (Ohio State), Steven Childs (Cornell) and Michael Farrell



*Mark Bowers and guests at Bowers Maple Farm.*

(Cornell) held hands-on workshops on setting up tubing lines, the best ways to tap trees, how to market maple syrup, making maple cream and maple cotton candy and grading maple syrup. "The maple camp was invaluable," stresses Hervey. "The info we learned there was fantastic. That was the Association's first big accomplishment."

Paul Ronk, the current President of the WVMSPA, was a relative maple newcomer when he attended maple camp. "Camp was awesome! I learned so much. I came back home to Lincoln County, and I was fired up," Ronk says. "I wouldn't be in business today if it weren't for the Association because of all the classes they've offered and the info they've provided. Everything they do, if I'm available, I'm there because I still have so much to learn."

In 2016, the Association held the first Mountain State Maple Days, another idea Bowers had written down in his notebook. That first year, a handful of maple producers opened their sugar shacks to the public to let people see how sap is collected, boiled down and then bottled as maple syrup. "Mountain





*Maple Days 2023.*

State Maple Days has been huge for Family Roots Farm," stresses Hervey. "In our area (the Northern Panhandle), no one knew much about maple. They didn't know how it was made or even that it came from a tree. In those early years, our community was amazed to find out what was happening at our farm. We'd have 300 people at our operation on Maple Days. It got too huge for us to handle with our one-lane road and lack of parking. They wanted to bring in tour buses! We just didn't have the room. We've had to scale back but are so pleased people are that excited about maple."

Ronk says Mountain State Maple Days has been huge for his business, as well. "Maple Days has made all the difference for me. I really do have an advantage because I'm close to Charleston. The year before COVID hit we had more than 400 people visit our sugar shack. It was crazy in this holler," he laughs. "Last year, the numbers were down because of COVID, but I'm looking for 500-plus visitor this year."

Bowers estimates the Association, with the help of the WVDA and Future Generations University, has received nearly a million dollars in grant money to establish a maple industry in West Virginia. In 2022,

maple syrup production topped 13,000 gallons. The average retail cost for a gallon is right around \$44. "There is money in making maple," stresses Bowers. "You don't have to cut the trees down and make boards out them."

Every year, the Association sets up shop at the State Fair of West Virginia. Several members have their syrups and maple products on sale at the West Virginia Country Store. They also man a cotton candy machine where they make maple syrup cotton candy. At \$5 a bag, it's one of the top sellers in the store and a way for the group to raise money to hold maple workshops and training throughout the year.

Bowers, Hervey and Ronk all agree what makes the Association so special is the fact its members aren't in competition. "Someone bought syrup from me recently," explains Bowers. "Later on, they called me up and asked if I had any syrup for sale in Charleston. I don't, but I told her to go to Capitol Market where a member of the Association out of Lincoln County sells his syrup. I didn't make a sale that day, but my friend did. That's what the Association is about, helping each other succeed." "We're not against each other," Ronk adds. "I don't know how other associations across the country do it, but here in West Virginia, we help each other. There is so much potential here in this state, we could add another 300 maple producers and still not be in competition."

Bowers says when he looks at his notebook now, the things he'd written down and hoped to make happen have been accomplished. But there's still one item left undone. "I want the Association to set up a demonstration at the Mountain State Forest Festival. Some of our members sell their products there, but I want a display that shows people how maple syrup is made and that it's a forest product. That's something we haven't done."

Chances are Bowers will make it happen ... with his notebook in hand.

The Association holds an annual meeting each spring, the 3rd Saturday in May, and everyone is welcome to attend. Mountain State Maple Days will be held February 18 and March 18. To visit a sugar shack near you or learn more about the Association, go to <https://wvmspa.org>. 🍁

# Expanding the Maple Industry in West Virginia

West Virginia Department of Agriculture  
USDA Acer Access Project AM170100XXXXG168  
2017

Leslie Boggess

The West Virginia Department of Agriculture has embraced the State's emerging maple syrup industry since the inception of the West Virginia Maple Syrup Association (see accompanying Market Bulletin article). When the USDA Acer Access program began, the Department was right there in applying for grant funding to move the industry forward. Our 2017 Acer Access award allowed the State to develop a research and extension agenda to foster the expansion of tree tapping and the growth of the maple syrup industry in West Virginia.

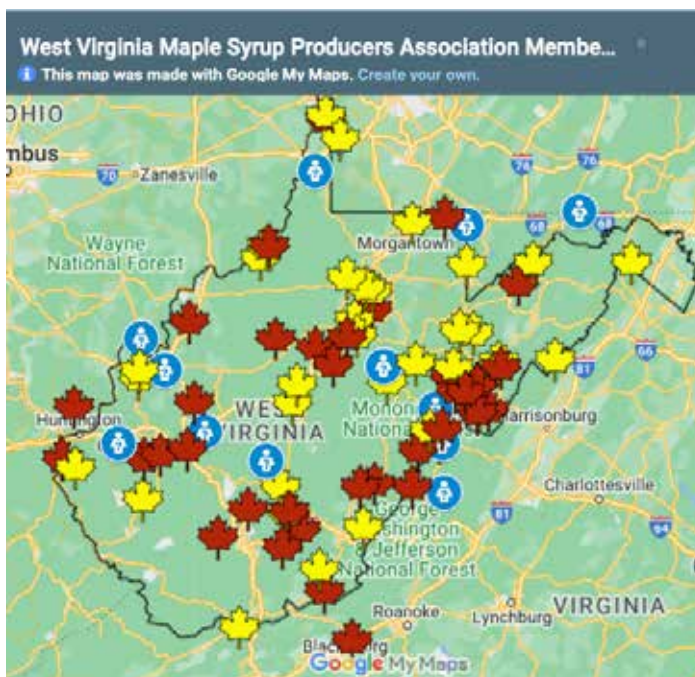
It all started with the Southern Syrup Research Symposium (SSRS). The SSRS brought top researchers from the northern states to West Virginia to meet with syrup producers from the central Appalachian region to learn "state of the art" sap and syrup production processes and to begin to address regional sap and syrup issues. Our Acer Access grant focused on building an awareness of West Virginia maple, initiated research into problems and issues identified at the SSRS,

and began networking maple syrup producers, through the WVMSPA, with academic institutions. The grant wrapped up in 2020 but left a legacy that is continuing to bear fruit through the subsequent Acer Access programs described in this newsletter.

So, what did we do? Through a sub-contract to West Virginia University (WVU) the grant funded the expansion of the WVU Research and Education Sugarbush. The program at WVU has served students through the Sugarbush Management and Sap Production course. The Research and Education Sugarbush serves as a site for continuing educational activities that help new producers get established and Natural Resource Professionals gain the skills that will allow them to service forestland owners interested in tapping. It is also the site for ongoing research into sap and syrup production in the Central Appalachians.

The grant also fostered the establishment of a regional network of research and educational institutions with a growing interest in sap and syrup production. These include Future Generations University, Ohio State University, Penn State, West Virginia State, and Virginia Tech, as well as Glenville State and Potomac State Colleges. Each of these institutions of higher education are teaching about maple syrup or engaged in sap and syrup research.

Finally, our 2017 Acer Access grant helped establish a Maple in the Classroom program, in which over 20 West Virginia schools have partnered with local maple syrup producers to bring maple into their classroom learning and students to the sugarbush. Students of all ages learn science, math, and technology through the sugaring process. They tap trees in their school yard, meet and learn through the knowledge of a local syrup producer, and are rewarded with some end of the season maple syrup for a pancake celebration. 🍁



# Leveraging Education and Research to Promote Maple Syrup Production in Ohio, Pennsylvania, and West Virginia

Ohio State University  
USDA Acer Access Project (AM190100XXXXG074)  
2019

Sayeed R. Mehmood

In 2019, an Acer Access grant was awarded to The Ohio State University, Future Generations University, and Pennsylvania State University entitled “Leveraging Education and Research to Promote Maple Syrup Production in Ohio, Pennsylvania, and West Virginia”. The overall goal of the grant was to assess current production and related issues, explore potential for future expansion, and design and deliver outreach activities. Specifically, the grant had three objectives:

- **Objective #1:** Establish baseline production data, production practices, market outlets, and sales for maple syrup producers in Ohio, Pennsylvania, and West Virginia.
- **Objective #2:** Develop an outreach strategy designed for different constituents (producers, rural woodland owners, land management professionals) and recommendation for appropriate policy instruments aimed at enhancing production and long-term sustainability.
- **Objective #3:** Implement outreach and education focused on increasing maple production and implementation of sustainable practices by producers and landowners.

The project personnel reflected the diversity in objectives and included a mix of both researchers and extension professionals. Soon after work on the project started in earnest, things came to a standstill due to the pandemic. The initial data collection, which involved several mail surveys, experienced extensive delays. Furthermore, any in-person meetings or outreach activities were also halted. However, the project personnel were determined to march on. They also recognized the opportunities that this unique situation presented and switched to completely virtual outreach activities. In retrospect, this was an excellent and timely decision that ensured that work on the



project continued, and also demonstrated great stewardship of taxpayer funds.

So, how are things going? Work on the first two objectives has been completed. Surveys of syrup producers in each of the three states were done. This provided baseline information of current levels of production and related issues. To gauge the interest and potential for future expansion, surveys of woodland owners in each of the three states were also conducted. Based on the information collected in these surveys, outreach plans for each of the three states were also finalized. We identified three distinct groups of stakeholders—current producers, woodland owners, and natural resource professionals. Since each of these stakeholders have significantly different education needs, we plan to design and deliver to each of these stakeholders.

Producer surveys revealed over 75 percent owned their sugarbush in each of the three states. While



most producers in Ohio and Pennsylvania have been in operation for over 10 years, a significant number of West Virginia producers (almost 45%) have been in operation for five years or less. Half of the producers in West Virginia had 500 taps or less, while the majority of the producers in Ohio and Pennsylvania had more than 500 taps. Most producers in Ohio and Pennsylvania used 5/16 inch taps, while slightly more than half of the West Virginia producers used 3/16 inch taps. While the majority of the producers in Pennsylvania and West Virginia used tubing, with or without vacuum, to collect sap, almost 60 percent of Ohio producers used bags or buckets. This was because of the significant number of Amish producers in Ohio.

Overwhelming majority of woodland owners, about 80 percent or more, said they did not tap their trees. This revealed that there was significant potential for expansion in syrup production. Furthermore, when asked about barriers to tapping their trees, 17 percent in Ohio, 19 percent in Pennsylvania, and 24 percent in West Virginia said they never really thought about it. Another 5 percent in both Ohio and Pennsylvania and 13 percent in West Virginia said they were interested, but didn't know enough. These two groups of woodland owners are likely

to be the most receptive to outreach programs about maple sugaring. Roughly a third of the woodland owners were also positive about several different modes of contact including workshops, publications, newsletters, online, and by natural resource professionals.

The project team has been busy delivering education and outreach programs through several well-established venues including Lake Erie Maple Expo, Ohio Maple Days, Maple Bootcamp, Ohio Woodland Stewards, Ohio River Valley Woodlands Wildlife and Water, Out of the Woods webinar series, and numerous other webinars. In addition to these, an in-service training for natural resource professionals was also delivered. Project team members are now preparing a white paper to encourage state regulators to allow the use of isopropyl alcohol as a sanitation agent.

This acer project is scheduled to end on September 29th of 2023. The team is planning several education programs and publications in the remaining months. This project so far has been an excellent example of collaboration between three different states and institutions, producer associations, and other professionals. 🍁



*Maple Bootcamp visits the finishing room at Stan Hess Family Maple*

# Sustaining the Central Appalachian Maple Syrup Industry through Integrated Forest Management Education Programming

Grant Updates from West Virginia University's Division of Forestry & Natural Resources  
USDA Acer Access Projects (AM19ACERWV0073 and AM22ACERWV1015-00),  
2019

Jamie Schuler

WVU currently participates in two federally-funded research grants focused on improving production and education in the Mountain State.

## ACER 2019: Sugarbush Management

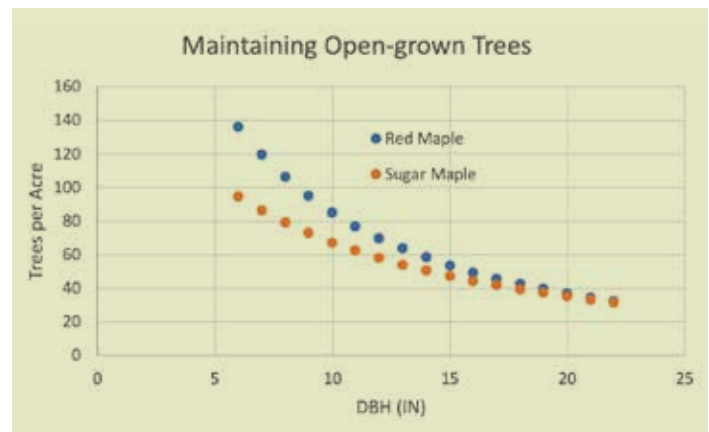
The goal of this project is to increase awareness and knowledge of management opportunities for forests associated with maple syrup production and stress the importance of understanding the resource, the potential management options, and to promote monitoring programs to limit threats to our natural resource.

One of the main objectives for this project was to develop a southern Appalachian region sugarbush technical manual for landowners and professionals. This manual will be used to educate landowners on current sugarbush management techniques and ways their forest management activities can be more "maple friendly".

We are in the process of developing a management guide that details suggestions for managing the tree resources as well as highlighting considerations for managing diseases and pests in the sugarbush. This sugarbush management manual will be available later in 2023.

Among our findings is that in our diverse Appalachian hardwood stands, species composition influences density targets. For example, red maple crowns occupy less area than crowns of sugar maple trees of the same diameter, meaning that an acre of land can support more red maple trees than sugar maple.

We have several current and on-going projects documenting maple growth rates in the region. Master's student, Matt Marsh, used long-term data



from the Allegheny region to produce updated growth models that suggest average diameter growth for sugar maple is approximately 0.1 to 0.15 inches/yr.

Thinning is often promoted as a tool to enhance syrup production and promote tree health and resiliency. A recently applied thinning of a pole-sized red maple stand showed an 82% increase in diameter growth for thinned trees compared to non-thinned trees (0.31 inch/yr vs 0.17 inch/yr) over a 3-year period.

A Master's student, Logan Ferguson, quantified the understory plants in 16 maple stands to compare sugarbush sites to non-sugarbush sites. Over 170 unique plant species were identified in these maple stands, including 9 that are considered non-native and invasive. His data showed increased incidence of non-native species on sites associated with sugarbush operations, which is likely linked to increased disturbance and trafficking associated with the sugar operations.

Looking for assistance in developing a management plan for your sugar woods? We are looking for additional sites to collect data. If interested, contact me at [Jamie.schuler@mail.wvu.edu](mailto:Jamie.schuler@mail.wvu.edu)



Dr. Matt Kasson and his master's student, Molly Sherlock, have done an incredible job over the last two years documenting insects and fungal diseases in managed and unmanaged sugar maple stands. They collected 2,603 woodboring beetles encompassing 40 different species from 3 sampling locations in PA and WV. One notable collection was *Dryoxylon onoharaense*, which to the best of our knowledge was the first-time this species was recorded in West Virginia. All species within Cerambycidae were native to eastern North America with no Asian longhorned beetle (ALB) captured (let's keep our fingers crossed!).

Over 1,500 wood plug samples taken from 192 maples across 6 managed sugarbushes and six unmanaged sugar maple stands to culture fungal diseases. Of the 192 maples, 130 were sugar maple & 62 were red maple; 160 symptomatic and 32 asymptomatic.

359 representative fungal isolates were identified using DNA sequencing capturing some 111 fungal species. *Tolyposcladium* spp. most abundant fungal genus recovered (n = 26) from 11 of 12 locations and may actually serve as a beneficial endophytic fungus. Armillaria root rot (Agaricales), Cytospora / Valsa canker (Diaporthales), Fusarium canker (Hypocreales), Sap streak (Microascales), Heart rot / white rot (Polyporales), and Eutypella canker (Xylariales) are important historic diseases impacting maple. All but the sap streak pathogen were recovered.



*Eutypella parasitica* (n = 2 stands) and brittle cinder fungus (1 stand) were only recovered from unmanaged forests. Eutypella-like cankers seen in many stands did not yield *E. parasitica* but instead yielded *Daldinia*, *Nemania*, and *Xylaria*

(often together from same cankers). *Climocodon septentrionalis*, an important decay fungus was found from 5 stands, including 4 managed stands.

### ACER 2022: Guidelines for 3/16" tubing systems (with Future Generations University)

This project represents a collaborative effort among many scientists throughout the state working on a common goal to develop a guidebook for 3/16" tubing system users.



*Getting high levels of natural vacuum on 3/16" lines.*

In our first year (2023 season), we installed two separate studies to assess sap production.

One study focuses on sanitation treatments (companion study with Future Generations). The second study assesses whether tapping below the lateral line can extend the tappable area on trees without affecting sap yields. Thermocouples inserted into the droplines will also monitor sap temperature. Both studies are in the first year and are expected to run 3 years. A future experiment comparing 3/16" vs 5/16" droplines on 3/16" lateral lines is planned to re-assess a previous experiment that had variable results.

Jamie.schuler@mail.wvu.edu, (304) 293-3896 🍁



*Tapping above and below lateral line experiment.*

# Accessing South Atlantic Markets for US Maple Syrup: Educating Consumers and Enhancing Distribution Networks

Future Generations University  
USAD Acer Access (AM200100XXXXG011 )

2020

Joey Aloï

In 2020, Future Generations University received Acer funding for a maple syrup marketing and promotion project called *“Accessing South Atlantic Markets for US Maple Syrup: educating consumers and enhancing distribution networks.”* We’re now in the last eight months of the project. So much of what you’ve seen our team doing over the last 2 years or more has been part of this project – promoting Mountain State Maple Days, bringing the mobile sugar shack to the WV State Fair, hosting webinars on marketing and promotion, and partnering with local media to tell the story of maple syrup in Appalachia. But there’s a lot that’s gone on behind the scenes too, that you might not know about. And there’s an underlying plan, that explains the relation between all the different ways Future Generations promotes maple syrup. Explaining all that is the point of this article.

Members of the WVMSPA already know that maple syrup has a long history in West Virginia, going back before European arrival in these mountains. But nationally, most people tend to think of maple syrup as a “Northern” crop; they associate it mostly with New England or Canada. So, our main goal with this project is to make it clear to Southerners – anyone living from Baltimore to Texas – that they can get locally produced maple syrup by looking to Virginia, western Maryland, and West Virginia. The hope is that once consumers know this, they’ll be more



likely to use authentic, Appalachian, maple syrup in their homes and restaurants. To achieve this goal, we’ve tried to do two main things south of the Mason-Dixon line (or west of the line, for the Northern panhandle): (a) increase overall awareness of maple syrup, and (b) increase consumer access to maple syrup.

Like I mentioned above, a lot of what we do to help with Mountain State Maple Days falls under this project’s umbrella, as does our participation in Highland County VA’s Maple Festival. We love agritourism events like these because they hit both targets – they increase access and awareness. More importantly, Future Generation University believes that part of the power of agroforestry, and especially of maple syrup, for community-led economic development lies in the function of maple syruping as a focal practice and in the eating of syrup as the center of communal celebration.

Eating syrup is fun, and so is visiting a sugar shack. Agritourism is unique in its ability for community engagement, and maple syrup is a uniquely valuable crop for agritourism. It makes Appalachians proud to be from the mountains, and it keeps our traditions alive and economically relevant.

Agritourism events are a big deal for small and mid-sized producers – they establish connections with new individual and restaurant customers, and they move some bottles of syrup. But they can be barely a blip on the radar of larger producers. So, to help



these producers increase consumer access, Future Generations University helped develop a brand, label and marketing plan for a collective of wholesale maple syrup producers: [www.authenticappalachia.com](http://www.authenticappalachia.com). Through this brand, these producers take bulk maple syrup and package it for traditional retail locations, like chain grocery stores. These are new markets for these producers, and a new value-added product. Over the course of this project, we assisted in the sale of several pallets of 12-oz. glass bottles of this syrup. A northern bottler shipped to our foodhub grant partner Appalachian Sustainable Development (ASD), and our southern bottler shipped to an independent produce wholesaler. As of reporting, we can confirm that ASD has found 12 grocery or specialty story buyers, and it's looking like we'll land in over 60 before this funding stream ends in October.

To aid in this process, we developed marketing materials (including rack cards and small "nip" bottles of syrup), labeling, bills of lading, and tracibility paperwork as requested by the buyers. We also assisted in quality control at the northern bottling facility and logistics at both facilities. We designed the bottle in such a way that picking it up, reading it, purchasing it, and/or using the QR code on the back raises awareness about the culture and history of maple syrup production & consumption in Appalachia. Accordingly, this syrup (a) helps consumers gain knowledge about how to create and access maple syrup (b) increases the number of stakeholders buying, selling, aggregating, producing, and/or distributing maple syrup or maple-sap products (c) increases the number of new and/or existing delivery systems/access points reached that expanded and/or improved maple syrup or sap-related products (primarily, grocery stores, indoor farmers' markets, and other access points), and (d) increases revenue and jobs for maple producers.

In designing this bottle and finding an accurate price point for selling it, the Future Generations team were helped by our grant partners at Virginia Tech. They were able to visit several Southern grocery stores to see how maple syrup was sold, packaged, and priced, and gave us information so that our Appalachian product would sit next to comparable products and not be confused with Canadian syrup or non-maple imposters. We also partnered with Virginia Tech on a maple



*Mobile sugar shack "The Sap mobile" in operation*

syrup producer survey, to help us understand how much syrup is being produced in our project area, where most of it is going, and how much money is being made in the process. This information will help us do a better job at promoting maple syrup in future projects. If you haven't taken the survey yet, please do so by visiting this link: <https://viriniatech.questionpro.com/a/TakeSurvey?tt=HMb07WtUQ9o%3D>

The most impressive work our partnership with Virginia Tech on this project has produced is an economic impact analysis of the Highland County Maple Festival. This study found that around 19,925 visitors attended the Highland County Maple Festival in 2022. According to random visitor surveys, 88.75% of visitors went to at least one sugar camp during the festival, which means that 17,683 people toured at least one sugar camp during the festival. 66.56% of visitors, or 13,262 people, visited at least two sugar camps. One of the most impressive findings is that the event generated a direct economic impact between \$1.36 million and \$2.01 million in Highland County. Like I said above – maple-based agritourism is serious business! This year we're going to try to do a slimmed-down version of this study for Mountain State Maple Days. Reach out if you want to participate!

The University brought our mobile sugar shack to the West Virginia State Fair and set it up to attract and educate fair visitors. The sugar shack is a



converted trailer with a small shed on it. It contains a wood-fired evaporator, sap tanks, and a pump. On the outside of the shack are four informative signs that have different types of maple facts, and a demonstration “tree” with a taphole, spile, and bucket. We tabled next to the shack and brought along syrup-making equipment and recipe cards, many of which were handed out. This educational event helped increase knowledge on how to access or produce maple syrup or maple-sap products.

The University brought in a well-known chef to host a maple-themed farm-to-table dinner that benefited the Pendleton County Farmers’ Market. This dinner was hosted at a resort that is the home of another maple producer and value-added producer. This



event (a) helped event participants gain knowledge about how to create and access maple syrup; (b) increased the number of stakeholders buying, selling, aggregating, producing, and/or distributing maple syrup or maple-sap products; (c) increased the number of new and/or existing delivery systems/access points reached that expanded and/or improved maple syrup or sap-related products, and (d) increased revenue for maple producers.

In the Spring 2022 issue of *WV Living*, maple syrup was highlighted as a “homegrown ingredient” in the recipe section. Three recipes were included, as well as an image of Authentic Appalachia syrup, the University-produced cookbook *Appalachian Maple Recipes & Stories from the Mountains*, and website addresses for the cookbook and Authentic Appalachia. *WV Living* has a subscribership reach of 68,000 (with the industry average pass-along rate of 4). There are also 53,500 average digital edition views per issue, for a total of 121,500 issue views. This earned media coverage increased the number

of stakeholders who gained knowledge about how to create and access maple syrup.

As part of the annual meeting of the West Virginia Maple Syrup Producers’ Association, we held a grading workshop. This was designed to teach producers how to grade their syrup – golden, amber, etc. This will allow these producers to better market their product, getting increased revenue as landowners or operators of privately held land containing maple trees. This workshop was accompanied by a tasting competition, featuring chefs from across the region. Both the workshop and the tasting increased the number of stakeholders who gained knowledge about how to create and access maple syrup.

As part of our ongoing webinar series *Out of the Woods*, we held two marketing-related webinars. The first was entitled “Maple Mixology,” and it was about how to use maple syrup while making mixed drinks. Although it was open to the public, the purpose was to entice bars, restaurants, and other agritourism locations to use maple syrup more often. The second was entitled “Supporting Maple Agritourism Through County Wide Efforts,” and it showcased the work of the Pocahontas County (WV) Convention and Visitors Bureau to promote maple syrup production and affiliated agritourism initiatives. The target audience here was other CVBs, regional or state-wide development agencies, nonprofits with similar tourism-focused missions, and, of course, the general public who can influence these decision makers. Pocahontas County is a good example of a place where maple syrup is taken seriously as an economic development tool, and we wanted to encourage others to treat it that way. These webinars increased the number of stakeholders who gained knowledge about how to create and access maple syrup.

There are a lot of other small tasks and events that have fallen under the umbrella of this project – for example, matching a maple producer up with a local store or outlet in their neighborhood. But, I think I’ve captured the gist of the project in this article. I hope this helps you understand what we’ve learned, and what we’ve accomplished, with your hard-earned tax dollars. We’re currently in the middle of proposing a follow-up marketing and promotion project, so don’t hesitate to reach out if you have ideas or questions – [joey.aloi@future.edu](mailto:joey.aloi@future.edu). 🍁

# Freeman's Maple (red x silver) Potential for Syrup Production and Resilience in Ohio's Forests

Ohio State University, USDA Acer Access Project (AM200100XXXXG009)  
2020

Gabriel Karns

Sugar maples are the gold standard for maple syrup production – there is no disputing that. But other maple species, such as red and silver maple, probably deserve more attention than they have traditionally been given. Mounting pressures from climate change, forest pests, and a host of other reasons make other maple species more important than ever. However, given the traditional focus on sugar maples, good data and solid understanding of those *other* maple species' production potential is limited. Our ACER grant "Freeman's maple potential for syrup production and resilience in Ohio's forests" seeks to address this lack of knowledge with a couple key objectives. First, to genetically profile naturally occurring red x silver maple hybrids (*Acer freemanii* or Freeman's maple), and second, compare difference in sap sugar content, sap yield, and production phenology (just a fancy word for timing) between sugar maples and Freeman's maple.

At the beginning of our grant, we thought we had straightforward Freeman's maple trees mixed in with the sugar maples of the Ohio State University-Mansfield research sugarbush. Were we ever wrong. Turns out the hybrid maples are far more mysterious than a simple first generation cross between a red maple parent and a silver maple parent. Stay tuned as we conduct more genomics analyses to better understand for further genetic testing!

The remainder of this article will focus on the production potential comparison between our research sugar maples and mysterious hybrid maples. Research began in the 2021 as we pulled 20 sugar maples and 50 mystery maples from



*Freeman's Maple unusual bark patterns.*

our production system to single-tree sap collection chambers that measured daily individual tree performance. We continued that research in 2022 and are now underway for our 3rd funded 2023 field season. All signs point to a 3rd consecutive topsy-turvy sap season punctuated by high temperature spikes early and often, not at all the prototypical "ideal" syrup seasons of yesteryear. With those conditions as a backdrop, our first 2 years

of data confirmed that sugar maples are indeed sweeter than our hybrid maples. The interesting note with regards to Brix is that sugar maples lose considerable sweetness as the season advances, but our hybrid trees hold a more constant sugar level from start of season to finish. With regards to sap flow, the hybrid trees outproduced sugar maples in terms of volume in 2022, but sugar maples won that contest in 2021. We are anxious to examine results from this 3rd and final season. Also worth noting, sugar maples seemed to get one more solid run at the tail end of each season than did the mystery maples. This is to be expected as sugar maples break bud later than other maples; however, this trend in different timing between species has not been observed in studies further north in places like Vermont.

How to sum up this research? Consider this – the best half of our mystery maples **OUTPERFORMED** the worst half of our sugar maples in terms of syrup production potential. For most producers, that realization is enough to stop ignoring other maple trees in the sugarbush and tap more inclusively of all trees *Acer*. We look forward to completing the 3-year project this spring and sharing those results soon! 🍁

# Enriching Maple in Appalachia

Future Generations University  
USDA Acer Access Project (21ACERWV1011-00)  
2021

Mike Rechlin



Future Generations University (FGU) has been the recipient of several USDA ACER access grants, all of which are designed to promote the expansion and health of the maple syrup industry in the central Appalachians. The funding provided by this grant titled: "Enriching Maple in Appalachia" has allowed FGU to introduce new and advanced sap production and syrup processing techniques to area producers as well as assist new syrup producers to become established. ACER Access funding has also, through other grants reported separately in this newsletter, allowed us to conduct research on regional issues of sap and syrup production, and initiate a marketing program to put "Authentic Appalachia" maple syrup on an increasing number of breakfast tables and in an increasing number of kitchen cupboards.

Enriching Maple in Appalachia, our Acer 2021 award, was built around the goal increasing per tap yields and operational profitability. The 2017 and 2018 NASS (National Agricultural Statistical Service) surveys reported an average syrup production in West Virginia of 0.14 gallons per tap. Those same

years Vermont averaged 0.34 gallons of sap per tap. Looking at the numbers one would have to conclude that either Vermont's maple trees are a lot better than ours, or that the folks in Vermont know a thing or two about making maple syrup that we don't. After visiting a producer in central Ohio who routinely harvests 0.90 gallons of syrup per tap, we concluded our trees and our climate are as good as anyone's and that we just had a bit more to learn about high yield sap and syrup production methods.

With the unstated goal of increasing West Virginia syrup production to 0.30 gallons of syrup per tap "Enriching Maple in Appalachia" has the following objectives:

1. Increase maple syrup production through the adoption of high yield sap production methods, through research to adapt those technologies to the Appalachian region, through and increasing regional tap count.
2. Encourage woodland management practices that increase sap yield and sweetness, while maintaining forest health.



3. Ensure the financial viability and sustainability of maple syrup enterprises using data-based decisions and business planning.

To reach those objectives we focused our project activities on developing a series of regional “Model Demonstration Areas” (MDA) as well as conducting a series of “hands on” high sap yield workshops. The model demonstration area concept revolves around working with select maple syrup producers to see if we could increase their production and then to use these enhancements to show others how it is done. Each model demonstration area also has a unique story to tell about their operation or marketing strategy that we thought worth sharing. Workshops were to quickly get advanced sugaring techniques into the hands of producers. These are ongoing activities, and we hope to see more producers avail themselves of this knowledge in the coming years.

So, what is happening? In the first year of the grant, we established MDA’s at Family Root Farm, Frostmore Farm, The Laurel Fork Sapsuckers, and Spruce Knob Maple. This coming season we are adding Heasley Homestead Maple and Tom’s Creek Maple to that list. Each MDA provided us with detailed sap flow records. Following an assessment, the MDA owner agreed to implement select high yield production recommendations and then monitor sap flow to look for change. This past fall we organized sugar camp tours in the northern and central parts of the state to visit MDA sites and see how the program is running.

To assess each MDA site and develop recommendations to increase sap and syrup yields we organized a team comprised of Les Ober, Ohio Maple Education Specialist, and Dr. Abby van den Berg, UVM Proctor Maple Research Center, and myself. Working with an assessment checklist, available through FGU, we developed site specific recommendations grouped into three categories; “Low hanging fruit,” “Reaching for the Stars” and “The Gold Standard.” Each successive category identifies increasing levels of investment and engagement to achieve higher levels of production.

In addition to sugar camp tours (and there are more to come) we also conducted workshops to introduce maple producers to specific sugaring innovations from the “low hanging fruit” category

that can achieve almost immediate results.

Tapping workshops. Tapping a tree might be considered the easiest activity in making maple syrup. It certainly is one of the most enjoyable. You are out in the woods on a nice day and hopefully will be treated to that first sign of sap flow as you tap in your spile. However, there are many ways you can go wrong in tapping that will limit your production. Traditionally we have drilled our holes 1.5 inches deep. Work at Proctor has shown that drilling in 1.75 to 2 inches can result in up to 25% more sap. An extra quarter inch to get a quarter more sap, that’s worth doing. Setting your spouts. That one extra tap to be sure it won’t fall out could cost you up to 20% of your production by sealing off vessels through which the sap flows. In the tapping workshops we learn the skills to do it right, as well as the tree physiology and anatomy behind the proper practices.

Sanitation workshops. West Virginia is primarily a 3/16-inch tubing state. There is nothing quite like the “free” natural vacuum provided by 3/16-inch tubing in areas with plenty of elevation change. That is until it stops working. Many northern producers are ripping out their 3/16-tubing after dropline T’s and other fittings began clogging. The



key to not going that route is to clean and sanitize your tubing system after each year's use. Using a method developed by Arthur Krueger in Vermont we are holding sanitation workshops that promise to keep 3/16 tubing as clean as the day it was installed, and just as effective in increasing sap flow.

Forest management for Sap Production workshops. Your woods are just like your garden; if you tend to it and weed it, it will produce more. Maple producers that just go out once a year, drill in hand, to harvest the sap are not realizing its full potential. Most West Virginia producers grumble about their 1.5 brix sap. Granted, with an RO the sugars are concentrated before boiling. However, talk to Robin Kalog at Highland View Farm, and she's unhappy when the sugar content of her sap drops below 2.0 brix. How come? It's because her grandfather started managing his sugarbush for increased sugar content, which simply meant growing trees with more leaves to catch the sun's energy and convert it to sugar. Working with Jamie Schuler and the Forestry staff at WVU we began offering workshops to professional foresters on how to grow the ideal sugaring tree. Other producer level workshops on forest management for sap production are scheduled for the coming year. These will include a program engaging producers in monitoring their sugarbush for invasive insect pests that can have devastating impacts on forest health.

Quality Syrup Workshops: Working with Les Ober, Ohio State Extension, we have offered a series of workshops to ensure your maple syrup is of the highest quality. Quality syrup starts with making sure it is the proper Brix, includes syrup clarity, light transmittance for the advertised grade, and ends with taste. If it is 66 brix it is legally maple syrup, and if it tastes good, then it is good. Putting out anything but the highest quality syrup is a sure way to lose markets, and financial viability is based on not losing markets.

And, how is it going? Greg Christian, Tom's Creek Maple, reports that after modifying his tapping procedures in 2022 he had his best year ever, averaging 0.29 gallons of syrup per tap. (Which, by the way is really close to the objective of 0.30.) When not making maple syrup Greg is an engineer. He is using his engineering skills to improve on the Krueger method for sanitizing sap lines. This season



his lines look almost new and he is hoping for even further improvements in per tap yield. Talk to Missy Moyers-Jerrells at the Laurel Fork Sapsuckers. Sanitizing her lines gave her the second-best year on record, and sap in the sanitized lines was running clear late in the season while sap in unsanitized lines had developed a milky color. Meanwhile, Ronnie Moyer's forest management thinning at the Laurel Fork are slowly increasing sap sweetness.

Reports on progress are available through the maple program at Future Generations University. Plan on attending an upcoming sugar camp tour and a workshop scheduled for May 19th, the day before the West Virginia Maple Syrup Producers Association's annual meeting. A copy of the sugaring operation assessment form is available from the office. Let's reach that goal of 0.30 gallons of syrup/tap and let's have everyone be a model demonstration site for your area. That's what we call "Enriching Maple in Appalachia." 🍁



# Designing and operating natural vacuum sap collection systems: A user manual for 3/16-inch diameter tubing

Future Generations University in Collaboration with WV State University and West Virginia University  
USDA Acer Access Project (AM22ACERWV1015-00)  
2022

Mike Rechlin

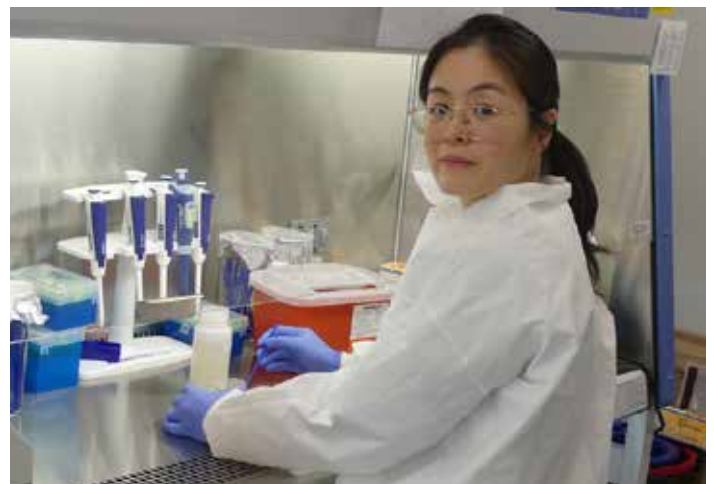


*WV State Research association Thalia Guadalupe Ochoa Bernal prepares to drill her first taphole.*

Most West Virginia maple syrup producers use 3/16 tubing. It is a natural sap collection system for rural, off the grid, mountainous regions like much of our state. After its conceptual development by Tim Wilmot at the Proctor Maple Research Center it seemed as if all you needed to get the sap yield benefits of vacuum on sap lines was elevation change. However, over time it became apparent that that was not quite the case. Issues with its use arose as did questions from new and existing producers on the fine points of setup and operation of these sap collection systems. Five-sixteenth systems with their vacuum pumps and releasers were a known entity, our friends up north had been figuring them out for years. Three-sixteenth systems, following a different set of physical principles, were new and relatively untried. As maple producers used these sap collection systems, they began

learning how they differed from the “tried and true” 5/16 systems and we began to realize that we had a lot more to learn to maximize the production capabilities inherent in this new technology.

This Acer Access funded project is designed to gather what we do know about 3/16 sap collection systems and to fill in some of the critical knowledge gaps needed make them work effectively over the long run. When designing and operating the classic 5/16 system syrup producers could reference the New Your State Tubing and Vacuum System Notebook, compiled by the Cornell Maple Program Manual. We recognized that 3/16 producers needed a comparable tubing manual. To bring the needed expertise to bear on this project, Future Generations University (FGU) is partnering with the Dr Yangjin Jung, Asst. Professor of Food Science at the Food Science Lab, WV State and Dr. Jamie Schuler, silviculturist and director of the Maple Syrup Research and Education sugarbush at West Virginia University (WVU). In addition, we are drawing on the



*WV State Food Scientist Yangjin Jung looking at microbial buildup in saplines.*





*Randy Kimble with sapline sanitation study collection tanks.*

engineering prowess of Dr. Keith Heasley PE, the long 3/16 experience of the Krueger-Norton sugarbush in Vermont, and the practical knowledge and expertise of the many producers in the state that have been working with 3/16 sap collection systems.

The Designing and operating natural vacuum sap collection systems Acer project began this past October, with the field teams hard-pressed to have their work up and running before the 2023 sapflow season. The objectives of the project are to:

- Conduct the requisite engineering studies, applying the principles of physics and drawing on established engineering concepts to understand the flow of sap through 3/16 tubing systems that create a “natural vacuum” to increase sap flow.
- Research sap flow and sanitation practices as they apply specifically to 3/16 natural vacuum tubing systems. And to,
- compile the findings in the first two objectives into a 3/16 natural vacuum tubing manual and extend that knowledge to new maple syrup producers and to those contemplating expansion of their sap collection systems.

As reported on in a separate Newsletter article, Jamie Schuler, with the help of his field assistant Kendall Hill are conducting studies on the relative value of 3/16 vs 5/16 drops on 3/16 sap collection systems,

on tapping below the lateral line on 3/16 systems, a study on temperature changes in the spout and dropline, and a sanitation study to overcome the fitting plugging issues plaguing many 3/16 users.

Yangjin Jung is looking at the buildup of microbial mass in new and used tubing, the expected longevity of zap bac spouts, and is gathering baseline data as part of the multi-institutional sanitation study.

FGU, led by Mike Rechlin, is running a replication of the sanitation study being done at WVU, coordinating a discussion through their new outreach program “Tap Talk” on hybrid systems using small diaphragm pumps, working with Keith Heasley and the company Farmblox to develop an economical vacuum monitoring system for 3/16 tubing systems, and collaborating with Keith on his ongoing engineering studies of sap flow in 3/16 systems.

Although this work is fresh “off the blocks” this year, we expect to soon have preliminary results available to producers. Although the 3-year project objective is to develop a comprehensive 3/16 tubing installation and operations manual, we plan on presenting our research findings through a series of articles in The Maple News. We will also be front and center with a series of workshops offered on May 19th (see accompanying announcement) the day before the WVMSPA annual meeting. 🍁

# WVMSPA Annual Meeting



## Save the Date, Saturday May 20th for the:

### WVMSPA Annual Meeting

- **Business meeting of the Association**
- **A chance to 'schmooze' with like-minded maple syrup folks**
- **Plan future Association activities**
- **Compete for top honors in the WVMSPA Products Competition**
- **Maple's on the Menu for the Association's Annual Producers Banquet. 1:00 pm this year.**

Save the Date before the Date: Friday May 20th "**Maple Graduate School**" – Following up on the successful maple quality workshop of last year we're planning a full day of activities for those of you who can come early.

Starting Thursday evening, Zoom on in to the "Out of the Woods" session featuring Dr. Abby van den Berg of the Proctor Maple Research Center for a presentation on "**Total Yields and Syrup Flavor from Red Maple.**" If you're one of those who turned up your nose and walked on by a red in your woods, this program may have you heading back that way, drill in hand.

Friday Morning – **Sapline Sanitation Workshop.** Get your boots on and learn how to keep your saplines looking as good as when you put them up while increasing your sap yields. Presented by: Greg Christian and Kate Fotos.

Friday Afternoon – **3/16 Tubing Workshop,** introducing hybrid systems. Been a little disappointed by your production recently? Travel 15 minute's to Kody Boon's sugaring operation where Kody and Keith Heasley will be teaching us what they are learning about advanced techniques to get the most out of your 3/16 tubing system.

Ending up Friday Evening – **Business Planning Workshop,** the way to increased profitability. The way to increased profitability is not necessarily through more taps. This session will help you look at your maple business, and your business decision making processes, in ways that will not only help you make more syrup, but also make more money from your effort.

Details on these events and activities will be coming out in an invitation letter from our President Paul Ronk.



# WVMSPA Membership Application 2023

## 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 \_\_\_\_\_

Street address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip code \_\_\_\_\_

Phone number \_\_\_\_\_ Cell \_\_\_\_\_ Email address \_\_\_\_\_

### 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)

### Listing preference (check one):

- I give permission for my contact information to be shared with paid members.
- I do not give my permission to share my contact information with paid members

### Annual dues: \$25, includes:

- Maple Syrup Digest Subscription
- Biannual Newsletter
- Workshops on relevant sugaring topics
- Participation in WV annual maple weekend

West Virginia Maple Syrup Association  
2988 Compressor Station Rd  
Bruceon Mills WV 26525

