

# Creasy Jane's Herbal Remedies

A Case Study By The  
*Livelihoods Knowledge Exchange Network*

## BACKGROUND AND TRAINING

Ruby Daniels is an herbalist and agroforester carrying on traditional Afrolachian practices from her ancestral homeplace in Stanaford City, West Virginia. After receiving her master's degree in therapeutic herbalism from the University of Maryland, Ruby returned to the West Virginia coal camp which her family had left a generation before. In her youth, she had spent summers learning from her grandmother how to care for and use native ecological abundance to heal and nourish the largely African American coal mining community of Stanaford. Ruby also studied under Paul Strauss at the United Plant Savers sanctuary and learned the business of selling herbal remedies. She started her own LLC - named Creasy Jane after her grandmother - to turn her traditional knowledge into a value added product business.

## CULTURAL VALUES AND MEANINGS

Ruby grew up in Columbia, Maryland and moved to Baltimore to finish school. There, she worked to promote native plant populations and species through community garden non-profit projects in the urban core two blocks from where Freddie Gray was murdered. After doing what she could to help heal the community through gardening and sharing herbal products tailored for Black customers, Ruby decided to move back home to the old coal camp in Stanaford to carry on her grandmother's traditions.

Facing many of the same problems of racial discrimination and effects of the opioid crisis that she had tried to heal in Baltimore, Ruby began growing her business from her grandmother's old sites as well as



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"And the person that influenced most of my work and my love for West Virginia [and] this place is my grandmother and my grandfather....that's what brought me back here. And my family always knew that I would probably be the one to come back home. I was born in Maryland at Andrews Air Force Base. But I spent summers here. I used to run up and down these roads barefoot...I loved it here. And I love the people here."

—Ruby Daniels

some rented land. In addition to medicinal plants that are trending across the region, Ruby stewards African American legacies by planting heirloom varieties of black-eyed peas, as well as *Ipomea sp.* a wild cousin of the sweet potato, known in African American lore as "High John the Conqueror."

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"[These] Black Eyed Peas are "whippoorwills" and "iron and clay," which are some of the original black eyed peas that were brought by the slaves to the United States. So they're a little bit smaller. They have a richer taste."

—Ruby Daniels



Ruby Daniels has launched her agroforestry project in the former coal town of Lanark, WV, initiating reforestation with botanicals and vegetable crops (Photo by Mary Hufford)

## ECOLOGICAL DYNAMICS OF THE SITES

Converting her small woodlot into an agroforestry system, and advising managers of sites around the state on wildcrafting, Ruby cultivates a large number of species to create her line of herbal products. Skullcap, motherwort, balm of gilead, blue and black cohosh, bloodroot, trillium, ginseng, solomon's seal, ramp's, elderberry, hyssop, calendula, skullcap, motherwort, hawthorne, poke, comfrey, sassafras, and boneset are just a few of the plants Ruby stewards and harvests. Through rental agreements, participation from neighbors, and new land acquisitions Ruby has steadily increased production towards self-sufficiency to meet increasing demand. Ruby intentionally cultivates in ways designed to improve ecological relationships. She improves the soil through the use of "three sisters" plantings that bring nitrogen fixing beans into collaboration with nitrogen-depleting corn, in soil shaded, for water retention, by squash. And she selects plants that attract pollinators.

"I try to pick plants that do multiple things, have a purpose, have a way I can make money... you have to always think in your mind....What can I do with it? I mean, it's beautiful. They're all beautiful, but they also have a second purpose too."

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"As my plants start to pollinate more, I see more of a variety of beautiful songbirds here. And... I mean, like all that is a part of having a forest and a healthy forest is that you support the animals as well. And I think the Hawthorne will kind of keep the deer population down, because I don't think they want to get stuck in four-inch thorns just like people don't. So I think, you know, there's a way that you can have security, but still also have trees"

—Ruby Daniels

## FOREST FARMING MANAGEMENT AND PRODUCTION



*Echinacea purpurea*, purple coneflower, known for its antiviral properties, in Ruby Daniel's pollinator garden. Photo by Mary Hufford

Through her work as a site assessor for beginner agroforestry operations through the West Virginia Forest Farming Initiative, Ruby understands intimately the forest relationships that create habitat not just for native plant species, but for an abundance of harvestable populations of those species. Spearheading the effort to educate wild harvesters on appropriate timing of harvests and stewardship of



Harvesting skullcap (*Scutellaria laterifolia*). Photo by Mary Hufford.

vulnerable habitat, Ruby spends as much time in the woods as she does in her commercial kitchen creating value added products.

Creasy Jane's product line emphasizes efficacy and testing. Ruby draws on her years of experience and training, to create herbal products that utilize plant material harvested at the right time for the specific chemical compounds needed in the value-added process. All of the labor of planting, stewarding, and testing is important. But, also important, is skilled harvesting. It takes detailed knowledge of each species, to know the best day and even time of day to harvest – when that species is producing the chemical compound needed for the desired product.

## ECONOMICS AND MARKETING

Drawing on her Afolachian heritage, knowledge, experience, and technical training, Ruby is able to craft products that command a higher retail price. Because Ruby has cultivated a strong following through word of mouth and self-promotion, Creasy Jane's is becoming known in the region as a source of effective herbal products specifically formulated to suit the needs of Black communities and consumers. While not catering exclusively to Black customers, Ruby Daniels is shaping an unprecedented space for Afolachian herbal traditions, as she heals her piece of central Appalachia and teaches others to do the same.

## FUTURE PLANS

As Ruby develops her plant sanctuary in Stanaford, she looks decades ahead to the growth of her early succession forest into a mature mixed mesophytic forest, providing food and medicine for her community and her clients. Ruby will also continue her participation in workshops and demonstrations in the region to help raise awareness about turning traditional knowledge into value added opportunities, and her agroforestry practices.

–written by Chrissa Mae Kallal

Creasy Jane Herbals  
P.O. Box 155  
Stanaford, WV 25927  
Phone number: 443-333-7952  
Email: [creasyjane@gmail.com](mailto:creasyjane@gmail.com)  
Website: <https://www.creasyjane.com>

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*This publication was made possible through a grant from the  
USDA National Agroforestry Center.*



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# Laurel Fork Sapsuckers

*A Case Study By The Livelihoods Knowledge Exchange Network*

## BACKGROUND AND TRAINING

Laurel Fork Sapsuckers grew out of a family-owned farm that began 70 years ago, when Missy Moyers-Jarrells' grandparents purchased 600 acres of woodlands and pasture in Hightown, Virginia. They raised sheep and made maple syrup. Their son, Ronnie Moyers, created a lumber business (Moyers Logging), and raised sheep. Tapping maple trees took a back seat until about 2011, when Ronnie and his daughter, Missy, decided to revive the maple syrup operation.

Maple syrup had once been widely produced in Highland County, but few people were making it there by the beginning of the 21st century. Intent on reviving an important aspect of local forest heritage, Ronnie interviewed dozens of elders to capture their memories of what maple sugaring was like in their youth. He then thinned out a grove to enhance conditions for sugar maples, retrieved his parents' old buckets and equipment, and tapped twenty-five trees. It quickly became a community event as people stopped by to talk and share their own memories of making syrup and the many ways there are to use it. Ronnie decided to build a structure to store and process maple sap (commonly called a sugar camp), and named the operation "Laurel Fork Sapsuckers" after Laurel Fork – the stream flowing through the farm, and the yellow-bellied sapsucker, a species of woodpecker (*Sphyrapicus varius*). The camp, which has grown in capacity over the past eleven years, is a shared project of Ronnie, his two daughters, his son, and his grandchildren. It is commonly known that the sapsucker, seeking to satisfy its need for insects, taps holes in the back of sugar maple trees, the sap attracts insects, and which they return to eat. There is a resonance between the lure set up by the sapsucker, designed to attract insects, and the sugar camps that



"I had a vision. I've always wanted to do this. To actually build a sugar camp. And I told the family, I said, 'I think if we build a sugar camp and invite the public to come see the farm, during the maple festival, it would be nice if we could get maybe 200 people to come up.' The first year on the first day we had over a thousand people."

—Ronnie Moyers

open to the public each March, drawing thousands during the Highland County Maple Festival.

## CULTURAL VALUES AND MEANINGS

The sugar camp is motivated by love of the land and its cultural and historical legacies, and by a desire to demonstrate, through educational outreach, possibilities for making a living stewarding woodlands. The aim, said Ronnie, is not to keep growing bigger and bigger, producing more and more maple syrup, but to make enough to pay the taxes on the land, and to build community around the production of maple syrup. What they hope to grow is greater public awareness of sustainable forest-based livelihood opportunities in the region. They have opened their farm to the public for a variety of uses, including as a venue for camping and weddings.

The land has been in the family for three generations, with the fourth generation now helping with work. The names for places on the farm are thresholds to its history. Ronnie Moyers' hope is that in another three decades the farm will be designated as a "centennial farm" - that has been owned and operated as a farm for over 100 years. Ronnie relates the history of those

who used the land as he gives tours and answers visitors' questions.

## ECOLOGICAL DYNAMICS OF THE SITES



Missy Moyers-Jarrells, Laurel Fork Sapsuckers Tree Farm, Hightown, Virginia  
(Photo by Mary Hufford)

Ronnie Moyers managed the forest for thirty years, as a forester. He logged his own woods, and also consulted with and logged the woods of other landowners. Prescribing thinnings is a way of shaping the forest, and he was very interested in what worked, and what did not, and why.

One newer part of the Laurel Fork Sapsucker's program is providing habitat for golden-winged warblers. A program organized by NCRS has provided support and technical advice to the Daniels. Reflecting this new direction in forest management, patches of forests have been harvested to provide habitat for warblers.

A key focus of the operation is the management of the sugar maple stand (i.e., thinning) for increased and sustained sap production. The thinning provides openings for non-timber forest products and for regeneration of sugar maple. The farm has actively practiced sustainable forest management - Ronnie and Missy advise other landowners on sustainable forest management. Laurel Fork Sapsuckers was approved for certification by the American Tree Farm Program. In 2018, the farm was recognized as the State of Virginia Tree Farm of the Year. For Missy, who trained in forestry, the knowledge exchange is rewarding, not unlike the participation in the older barter and borrow system that still thrives in the mountains. The farm is busy helping to raise awareness of syrup making, forest management, and non-timber forest products in the understory. It often hosts educational workshops, guided school field trips, and recreational visitors.

“Every day,” Ronnie pointed out, “With my business. . .if I don’t learn something new, I’m not paying attention.” After thirty years, he said, “It’s coming together.”

## FOREST FARMING MANAGEMENT AND PRODUCTION



Harvesting mushrooms in the sugar bush (Photo by Tom Hammett)

The sugar grove occupies 30 acres of the 600 acre farm. The sugar house is located in a clearing downslope of the grove. The sugaring initially made use of the buckets and spiles used by Ronnie's father. They have upgraded to use tubing through which maple sap travels down hill to the sugar house, where the wood-fired evaporator is located, turning the steep slope into an asset for the business.

Ramps are a specialty. Sandy Moyers has developed successful techniques for transplanting and caring for ramp plants - sustaining and expanding the ramp resources at LFSS. She has successfully thinned and transplanted ramps to moist areas on the farm. The ramps dishes are well appreciated, and Missy has developed and sells a very popular ramp salt.

Seasonal gatherings require more labor at some times than at others. The festivals draw thousands of visitors over two weekends every year in March. Most labor is provided by family members; more help is brought in during special events. But some just show up and help. A visitor was so enamored with the boiling and syrup processing that he returns each year to help. Missy travels to give maple syrup talks at workshops and visits schools. She organizes and staffs a maple syrup exhibit at the Virginia State Fair.

## ECONOMICS AND MARKETING

Laurel Fork Sapsuckers stays well connected so it can offer opportunities for agritourism. The Moyers family sugar camp is included as one of 10 stops on the Virginia Maple Trail. A passport designed to encourage visitors to tour several sugar camps, was developed by MIssy and other producers with the help of Virginia Tech. Highland County has, since the 1950s, been the site of an annual Highland County Maple Festival. Every year on two weekends in March, ten sugar camps open to visitors. And venues in the county offer arts and crafts, music, and food. Visitors are attracted by the maple syrup but also purchase locally produced goods – fabric arts, baskets, carvings, canned goods, herbs, baked goods (maple donuts!), and ciders from heirloom apples. In addition to the Highland County event, Every year Laurel Forks also hosts an apple butter festival in October, and a Christmas fair in December. Laurel Fork Sapsuckers harvests greenery and makes wreaths and other decorative products for sale at the Christmas fair.



Incorporating NTFPs at Laurel Fork Sapsuckers (Photo by Tom Hammett)



LFSS is a member of a regional agritourism program

## FUTURE PLANS



Seasons of the sugar maple (Infographic by Raul Perales)

There are several new products and services being discussed. This year, as in recent years, the maple syrup operation was expanded to include a reverse osmosis treatment. The forest lands will continue to be managed for sustainable timber production, focusing on increasing sap production in the sugar maple stands, and through thinning and other silvicultural practices.

–Written by Tom Hammett

Laurel Fork Sapsuckers  
 10677 Mountain Turnpike  
 Hightown, VA 24465  
 Phone Number: (540) 290-1676  
 Email: laurelforksapsuckers@yahoo.com  
 Website: <https://laurelforksapsuckers.com>

This publication was made possible through a grant from the USDA National Agroforestry Center.



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# Silver Run Forest Farm

*A Case Study By The Livelihoods Knowledge Exchange Network*

Jonathan McRay and Cornelius Deppe share a vision of restoring land and community together through agroforestry. Headquartered on a two acre plot of land outside of Harrisonburg, Silver Run Forest Farm is a nursery and emergent landscape distributed throughout groves, orchards, and streamside thickets. The riparian nursery, woodland collective, and folk school incubates Appalachian food plants, including chestnuts, acorns, paw-paws, persimmons, elderberries, chokeberries, and mushrooms, supplying these to customers locally, regionally, and throughout the United States. What began as community outreach around forest species continues as relationship building among all components – human and more-than-human – of a constantly emerging, place-based agroforestry system.

## BACKGROUND AND TRAINING

Jonathan grew up in the mountains of Eastern Tennessee. Cornelius grew up in a Dutch community in Michigan. Their pathways to Keezletown have taken them through global projects to decolonize food production, in Mozambique and Palestine (Jonathan), and Bosnia-Herzegovina (Cornelius). They met while working with an educational outreach program for youth at Vine and Fig, an organization that Jonathan helped to found in Harrisonburg. “Starting in town,” Jonathan remembers, “the whole vision was stream restoration, for this really degraded, polluted stream in Harrisonburg that a lot of people have been tending. We wanted to bring in food and medicine as part of stream restoration.” In 2019 they secured two acres in Keezletown to serve as headquarters and research center for a dispersed nursery anchored in the backyards of friends throughout the Shenandoah Valley. Interpreting a possible Native American meaning of the name “Shenandoah,” they named it Silver Run Forest Farm.



“Part of our commitment each day is trying to look at how we can be free from more violence or waste. And when we can pull things out of our trash culture and our trash economy . . .and reuse them or recirculate them for a few more lifespans of use. It’s a joy.”

–Jonathon McRay

## SILVER RUN FOREST FARM



*Silver Run’s complex, multi-tiered agroforestry is supported by Central Appalachia’s mixed hardwood forest and topography. Dispersed in backyard nurseries throughout the Harrisonburg area, Silver Run’s agroforestry engages all layers of Central Appalachia’s deciduous forest, from bedrock to canopy. (Illustration by Carly Thaw for LiKEN)*

In terms of training, Jonathan and Cornelius emphasize ongoing mentoring by the species and processes they engage in developing their forest farm. They frequently allude to trees and mycelia as partners, who not only teach them what they need to

learn, but model the relationships on which Silver Run Forest Farm continues to build, through intentional biomimicry. “That’s kind of how we have structured our forest farms,” Jonathan noted. “Imitating [trees] as much as we can, economically and socially: How do we make our own lives and our economic practice. . . imitate the life of the trees. How are we moving and circulating things? How are we giving things away?”

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–Jonathan McRay

## CULTURAL VALUES AND MEANING

Inspired by farmer-to-farmer movements in the Global South, Jonathan and Cornelius bring indigenous theories and philosophies of land and resource stewardship to agroforestry. Their goal is to heal and nurture the communities of land and people they serve. Silver Run products include dozens of native plants. The project that began in the backyards of friends, is now concentrated on the two-acre site in Keezletown. Plants propagated from seeds and cuttings sourced from various locations in the U.S. Silver Run also offers technical assistance to landowners through consultations and workshops. At Eastern Mennonite University, Jonathan teaches courses in restorative justice, sustainability, and peacebuilding. Cornelius works with Willow Run Farm in Harrisonburg, a non-profit vegetable farm affiliated with the Mennonite community. Deploying his own bicycle as a pre-eminent agroforestry tool, Cornelius threads together a network of sites comprising the innovative dispersed forest farm that is Silver Run.

Headquartered within the urban pale, Jonathan and Cornelius intentionally subvert models embraced by mainstream agriculture. Their multicultural markets develop laterally (“rhizomously” as they put it), connecting sources and markets through social networks, while building on cultural foundations of barter and borrowing that characterize partially monetized rural Appalachian economies. Intentionally diminishing the outsized role played by money in food



Cornelius's bicycle, laden with elderberry starts for shipping.  
(Photo by Cornelius Deppe)

production and ecological stewardship, Jonathan and Cornelius elevate notions of the gift economy and the commons.

In their approach to regenerative and restorative agriculture, spirit and matter are mutually animated, as suggested in the African saying “crops won’t grow unless we dance.” Connecting the need for ecological restoration with the need for restorative justice and reparations, Jonathan and Cornelius look for ways to serve immigrants, including climate refugees, in the Harrisonburg area. Partnering with the Northeast Farmers of Color Network to distribute thousands of trees has also helped to model and expand applications for forest farming toward the goals of social and ecological justice, and restoring indigenous relationships to forests.

## ECOLOGICAL DYNAMICS OF THE SITE(S)

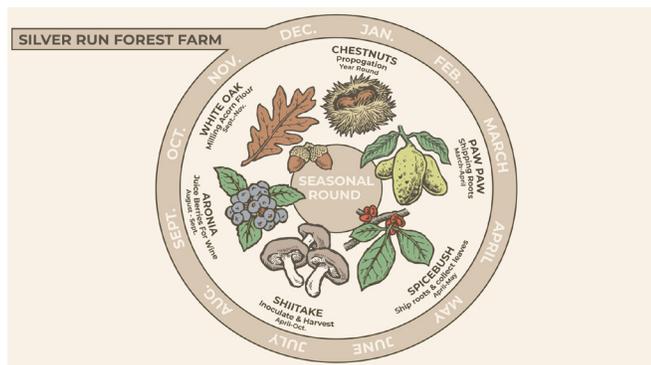
Thinking of ecology in its larger sense as a system reveals pathways for connecting nature with human activity. In many of Central Appalachia’s socio-ecological settings, small holdings don’t encompass the full complement of habitats and microclimates that can support agroforestry year round in the region. A traditional workaround has been to fold multiple properties into annual rounds of communal production through participation in an economy of barter and borrow. Someone may trade maple syrup for butchering services, for example, or allow hunting on their land in exchange for a share of the meat. In their iteration of this system, Jonathan and Cornelius enlist friends and neighbors to grow products in a

variety of settings. A social dimension is therefore always present, hinging agriculture into the region’s socio-ecological system.

While serving clients at a distance, Jonathan and Cornelius rely on locally sourced supplies – from seeds to soil care and packaging materials. Building the soil, they mix sawdust from a local mill into their compost, already enriched by local manure from antibiotic and GMO free livestock grazing on pesticide and herbicide free fodder. Leaves falling from their growing trees are left to decompose and shelter germinating seeds. Dumpster diving at Walmart yields the plastic bags needed to ship bare-root paw paws and other shrubs all over the country. Grain bags from a local brewery protect the larger stock. The bread and butter portion of their business, nursery production of plants for bare-root shipment, is enhanced through the use of air pruning. Air pruning of roots by a hardware cloth screen holding soil that is incubating paw paw seedlings prevents constriction of roots, encouraging a system of shorter, healthier branching roots. This facilitates shipment, ensuring successful planting.

They are attentive to cross-species communications that establish schedules governed as much by natural rhythms as by market fluctuations. “We’re not in a hurry. We’re planting trees,” says a hand-painted sign near the entrance of Jonathan’s home.

## SILVER RUN’S SEASONAL ROUND OF ACTIVITIES



Life cycles of forest species can be synchronized with household schedules to create a seasonal round of livelihood activities, integrating other forms of employment with the tasks needed to tend, harvest, produce, and market non-timber forest products. (Illustration by Our Numinous Mind for LiKEN)

For Jonathan and Cornelius, the yearly work flow is shaped by the seasonal cycles of plants, allowing them to distribute the workload around the year. While certain activities occur year round – such as soil care through composting, for example – it is possible to synchronize the running of a land-based household with the life cycles of intentionally selected forest species.

“Soft fruit season” in mid to late summer yields chokeberries. “That’s such a medicinal fruit,” said Cornelius, “one that we celebrate getting into ciders given to other people, you know, just the highest level of antioxidants of any berry.” They blend aronia into their apple cider later in the fall. In September they begin harvesting hazelnuts and paw paws, followed by acorns, chestnuts, along with early apples and pears, and then the hickory nuts, which Jonathan brews into hickory milk. The harvest of forest fruits is integrated with harvesting traditional crops: squash, corn, and sweet potatoes.

For much of November they turn their attention to the nursery, filling orders that have come in online – lifting, packing, and shipping plants that have reached dormancy, bare-rooted. They will repeat this process in the spring as well. Winter offers the needed down time for reflecting, envisioning, researching, and various building projects, such as air pruning beds and terraces. Commencing charcoal production around the time of the winter solstice is an opportunity for celebrating, as Cornelius put it: “The celebration of all the limbs and things we’ve dropped and cleared and spaces to actually convert it into the long term persistent organic matter that we inoculate.”

As early as January they may start tapping tree saps. “This year we were tapping walnut trees along the creek,” said Jonathan. “Sycamores came on later. And then over that time, we’re also doing propagating to the nursery so in the dormant seasons where we can do a bunch of cuttings so we might like do a whole bunch of currant cuttings and stick them in nursery beds to grow out for the next year, willows or elderberries and stuff like that. So some of the seeds, the hazelnuts, chestnuts, acorns, like we’re processing those for free, but also propagating to the nursery so it’s, it’s all stretched out over the year – like aronia or apples we’ll press and then we’ll take that mash and rake it into a nursery bed and cover it with soil and that’ll grow the crop for next year’s nursery.”

## LAND TENURE AND HISTORY OF/ON THE SITE

With the purchase of two acres of land, Jonathan and Cornelius have been able to plan for the future of Silver Run Forest Farm, something they weren’t able to do with government-managed land, and with many of the rental properties at the temporary disposal of nursery participants. While their planning continues to be vulnerable to gentrifying pressures from east coast metropolitan areas, they are optimistic that newcomers may be persuaded to participate in the Silver Run CSA – “Community Solidarity Agroforestry” – which distributes thousands of gift trees to farms,

nurseries, and community groups committed to regeneration and reparations.

The circular rhythms of seasons and multi-species life cycles offer recurring occasions for rites of celebration and opportunities to common with neighbors and collaborators. Such opportunities include co-owning livestock and equipment with neighbors, for example, or seeking and granting permission to forage on private property for nursery stock and materials for subsistence, with the ultimate aim of establishing land trusts. Plants on the landscape have initiated many of the foundational relationships.

“We knew spots in town where there were big Kieffer pears, or elderberry hedges or whatever,” said Jonathan. “We’d just go knock on people’s doors . . . and then people just got to know us, we were doing more consulting, so we’d go to people’s homes, and they’d say, Oh, if you ever need to harvest this thing, we’ve got this growing over here, let us know and then just like Cornelius is biking everywhere in town. So he just finds all these places that are amazing. And we get all these cuttings and seeds and stuff. And then in the larger valley, driving around along rivers and harvesting things when we’re out on a drive, going somewhere, we just notice, ‘There’s the whole row of chestnuts at the farm, let’s go knock on their door.’”

As both a marketing and educational tool, Silver Run’s website deepens the horticultural histories of indigenous species anchored in their nurseries, retrieving indigenous narratives of food and forest production, and incorporating historical and contemporary contributions of farmers of color into the emerging story of agroforestry. Thus from the remnants of indigenous landscapes and settler farms, Jonathan and Cornelius are regenerating agroforestry in the Shenandoah Valley.

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—Jonathan McRay

## VALUES OF THE LANDSCAPE: MANAGEMENT AND PRODUCTION

As caretakers, Jonathan and Cornelius think more in terms of collaboration than of management. Silver Run’s website features a large number of plants available from the nurseries, the demand for which still outpaces the supply. In the narrow sense, products are bare-root plants. In the broadest sense, the project is building food sovereignty by reconnecting to the



*A bottle of pear cider, fermented using yeast captured from aronia berries, served with amaranth crackers and acorn cake. (Photo by Mary Hufford)*

land. Jonathan and Cornelius attend to every aspect of production: acquisition of seeds and starts, building and caring for the soil, habitat enhancement, and serving existing markets while identifying new ones. Their website is a primary tool for much of this, as well as for cultivating local and regional networks.

The income-generating nursery is a small outcropping of an ongoing project of constant learning and development. Jonathan and Cornelius continually experiment with value-added products for use in their own households. These products may be developed for their own markets or those of others. This means that Jonathan and Cornelius are always thinking about new possibilities. On their radar: silvopasture with hogs in partnership with a neighbor, developing technologies for cultivating, harvesting, and processing the large diversity of nuts in Central Appalachia’s mixed hardwood forests, including chestnuts. They mill acorns while cultivating and shipping lesser known native varieties such as chinquapins and hazelnuts. While waiting for chestnuts

to bear, they are growing shiitake mushrooms near the stream bounding the land on one side; experimenting with and consuming beverages, growing their own food and medicines, and more. "This is corn crackers, just acorn flour with amaranth sprinkled on top," said Jonathan, as he served his guests. "And then this is an acorn cake mixed with wheat flour. And. . . a bottle of fermented walnut sap that is ready for tasting that's chilled. And cider with aronia yeast in it."

"Yeast off of the aronia berries that we saved and kept going," added Cornelius. "Not much alcohol."

Attending to the global context for forest farming, Jonathan and Cornelius are alert for opportunities to serve immigrants in Harrisonburg. An important resource for this work is Harrisonburg's Jubilee Climate Farm, which provides access to land-based livelihoods that are economic alternatives to the poultry industry. "That's really exciting," said Jonathan. "Because it's representing folks from Eritrea, from Congo, folks from different parts of Latin America, Guatemala, Mexico, indigenous background, as well. So those are products that help us feel grounded in the diversity of what we have around us in our community."

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"People will write and say, 'I haven't been able to find Cornelian Cherry for my grandfather who grew up in Iran and loves this, I'd love to get one for his yard.' I love that kind of thing so much. It's really fun, and very meaningful to be able to offer that. 'Can we send you more? Can we just send you extra?'"

—Jonathan McRay

Because their focus is community subsistence and care, forest farming becomes a means of meeting the needs of Harrisonburg's diverse ethnic and native communities for foods like cornelian cherry and aronia. Originating in western Turkey and the Balkans, cornelian cherry (*Cornus mas*) is popular with immigrants from Russian speaking and Persian countries.

Jonathan said, "People will write and say, 'I haven't been able to find Cornelian Cherry for my grandfather who grew up in Iran and loves this, I'd love to get one for his yard.' I love that kind of thing so much. It's really fun, and very meaningful to be able to offer that. "Can

we send you more? Can we just send you extra?" Similarly, Aronia, black chokeberry, is in demand among members of the Citizen Potawatomi Nation, whose ancestors initially developed the strain that is now gaining recognition as a superfood. "We're so excited to meet them," said Jonathan. "Like when they come to pick up the plants and talk with them, and 'we have more Aronia. just plant as much as you want. This is your plant.' It feels like that's why we do a lot of what we do. . .to hear those kinds of stories and partner in that way that we wouldn't have known otherwise, it's so amazing."

## VALUES OF THE ACTIVITIES: LABOR AND LIVELIHOOD

Silver Run's business model embraces a distribution of labor among human and more-than-human workers. Jonathan and Cornelius speak of "partnering" with trees and mycelia to distribute food and medicine throughout the land community. The partnerships enhance community well-being, through, for example, "getting lion's mane [mushrooms shown to ameliorate symptoms of Alzheimer's] into the intestines of our elders." Working outside and interacting with nature is a high priority for both men, modeling a livelihood dependent on a forest system that young apprentices can learn to steward from an early age. The time frame for producing a mature agroforest may thus exceed that of a single life, encompassing multiple human generations, to which forest species both very old and newly emerging, can serve as touchstones. Attention to such cycles, cued in multigenerational communications, guides Silver Run's integration of disjunct suburban neighborhoods into that larger framework.

Their livelihoods as agroforesters are supported by their household provisioning practices, which feed directly into Silver Run's product development. "If we think about the relationship between the economy and ecology," said Jonathan, "Ecology just means the study of the household in Greek and economy is. . . the tending of that household. There's a whole different word in Greek for the financial system that we now call the economy. [Agroforestry] is the tending of our household, which is this place this watershed, our relationships, our past."

Jonathan and Cornelius are continually testing and enhancing possibilities for forest products and sharing information about these. The nursery and the sale and shipment of bare root plants in fall and spring is the tip of the iceberg in terms of what they are developing. For their own households, with an eye toward market potential, they gather, grow, process and consume a wide range of mixed mesophytic

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“If we think about the relationship between the economy and ecology, ecology just means the study of the household in Greek and economy is . . . the tending of that household. There’s a whole different word in Greek for the financial system that we now call the economy. [Agroforestry] is the tending of our household, which is this place this watershed, our relationships, our past.”

–Jonathan McRay

forest products, including hazelnuts, hickory nuts, acorns, chestnuts, currants, crab apples, spicebush, comfrey. They grow shiitake and oyster mushrooms on logs, and make syrup from sycamore and walnut saps, fermenting walnut sap with yeast from aronia (out of which they also make wine). Resources for beverages are seemingly unlimited, including meads from pear, walnut, and aronia, coffee flavored with powdered spicebush berries (aka Appalachian allspice) or roasted pods from Kentucky coffee trees. Retrieving indigenous technologies, they are making bread from acorns and chestnuts milled into flour and flavored with spicebush and persimmon. “Chocolate persimmon muffins are the bomb!!” said Jonathan, who is considering working with a friend’s bakery to get those into the public eye and palate. For separating seeds from paw paw and persimmon pulp, Jonathan and Cornelius recommend tomato strainers and ricers.

The fractionated economic system practiced throughout Central Appalachia supports the development of forest farming. Like many in the region who are beginning forest farming, Jonathan and Cornelius draw minimal paychecks from their business, supplemented by subsistence practices and part-time employment opportunities from Eastern Mennonite University and Willow Run Farm. Such a fractionated economy offers struts throughout the region for developing worker owned cooperatives.

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“Chocolate persimmon muffins are the bomb

–Jonathan McRay



*Cornelius Deppe and Jonathon McRay, lifting bare-root Illinois bundleflower (a native nitrogen fixing perennial) for shipment in early spring, 2022. (Photo by Mary Hufford)*

## VALUES OUTSIDE THE LANDSCAPE: CIRCULAR ECONOMICS AND THE DECOLONIZATION OF AGRICULTURE

Silver Run’s place-based, community-based approach to agroforestry recognizes, honors, and renews relationships, some of them ancient, some emerging, among neighboring human and plant communities and the land. In this holistic, integrated approach to agriculture, ecology and economy are inseparable. Committed to a circular economy grounded in zero financial inputs and zero waste, they rely on experimentation to arrive at methods of processing. The values added begin with the investment of social capital – generated and brokered through interactions with human neighbors and with more-than-human partners. Returns on these investments are both monitored and celebrated.

The circular economy and ecology that Silver Run engages captures clean waste materials essential for sprouting new life. This starts, as Cornelius put it, by “opening your arms to the waste stream. . . and claiming it as a gift: there’s no such thing as waste. And once you can start to speed along nature’s effects of building rich soil, then you’re combining those plant allies that are already really good at what they do.”

From a friend with a construction company, they acquire sawdust which they moisten for use as a medium for shipping bare-root plants. What’s leftover they put into compost, where it is, as Cornelius put it, “easily myceliated by by the hyphal threads of mycelia and every piece of that is something we’ve salvaged

or recycled or composted or kind of moved into a different life form."

"We have access," said Jonathan, "to what so many others consider a waste material, you know, loads of wood chips or loads of horse manure, from a farm nearby that isn't sprayed and they don't have antibiotics. And so we can check in on that and, and being able to accumulate some of that in a small area, you can fast track, the fertility accumulation, [which] takes quite a while in an actual forest."

Twine for their shipments comes from hay bales salvaged from the farms of friends. Large grain bags originally stuffed with barley for a brewery near their first nurseries are perfect for shipping large orders. "We pull those out of the trash stream from the brewery there," said Jonathan. "There are constantly hundreds and hundreds of bags. But then for smaller bags, we're trying to save every little container we can from our own households or friends. Even old coffee bags -- we'll bundle up with Jerusalem artichokes."

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**"There's no such thing as waste. And once you can start to speed along nature's effects of building rich soil, then you're combining those plant allies that are already really good at what they do."**

—Cornelius Deppe

What about labels?

"We get window shades -- blinds -- that we hole punch," said Jonathan. "And then we write all the names of the plants on there and tie it on with a string, around each different variety."

The waste stream Silver Run embraces includes leaves dropped by trees, which break down more quickly as they are moved from forest floor into raised beds, where they obligingly form new relationships. "We have this beautiful forest around us," said Cornelius. "And so we are harvesting some of those waste leaves from the forest full of indigenous microorganisms and, and we spread those into our compost in layers and invite that whole biological team of allies from the forest down into our new beds that we're making."

"Part of our commitment each day," said Jonathan, "is trying to look at how we can be free from more violence or waste. And when we can pull things out of our trash culture and our trash economy. . . .and reuse

them or recirculate them for a few more lifespans of use, it's a joy."



*Acorns, ready for milling at Silver Run Forest Farm. (Photo by Mary Hufford)*

## SOCIAL AND ECOLOGICAL RESTORATION

For Jonathan and Cornelius, restoration agriculture intentionally flags and remediates centuries of destruction to indigenous land communities. Their website offers histories of plants that acknowledge the contributions of communities of color to ancient horticultures of the commons. "How far back are we telling the stories?" asked Jonathan. The more well-known history of the pawpaw, often tied to settler agriculture, ignores thousands of years of cultivation by indigenous communities, along with distinctly African contributions to horticulture and food preservation. "Enslaved people," Jonathan pointed out, "were cultivating pawpaw and persimmon and honey locust around dwellings for people who were trying to subsist outside of the enslaved economy." Through soil restoration practices Silver Run revitalizes relationships that were ruptured by the introduction of European technologies and crops. "We're honoring what the forests are doing around us," said Cornelius. "And harvesting the leaf litter and bringing the indigenous microorganisms that will create those bonds and using that in our mulching and compost. We're trying to bring the forest down to our beds here."

Borrowing from and modifying industrial agricultural technologies, Jonathan and Cornelius are boosting native tree nuts as well. "We need a broad-scale conversion," said Jonathan, citing the work of Acornucopia (a regional coalition of native tree nut growers and producers based in Asheville, North Carolina) to convert industrial corn equipment, like lime spreaders, to the task of hulling walnuts, while adapting the meters used to measure moisture in corn to the task of measuring moisture in acorns.

## ACCOMMODATING THE GIFT ECONOMY:

Jonathan and Cornelius intentionally produce more plants than they can sell. On their website is an option to contribute money toward the distribution of plants to frontline communities, where need is great and money is scarce. "We have online sales for bare root trees and plants that we're delivering," said Cornelius. "And then we produce way more trees than we're able to move through those sale channels. So we are redistributing a lot of them too. And that's been one of the biggest gifts of connecting with other humans around plants, particularly these organizations and frontline communities that are . . . trying to do restoration work. . . .culturally centered around indigenous sovereignty. . . .And we've been able to connect with some of those communities through the Northeast Farmers of Color Network."

## FUTURE PLANS

Through engagement with small dispersed parcels, Silver Run Forest Farm is intentionally patching together a larger forest-farmed landscape from within, while cultivating a future for that landscape. That future is continually emerging in the present as opportunities for development. Those opportunities include - but are not limited to - scaling up nut milling, transitioning industrial agricultural technologies to agroforestry-friendly technologies, working with agroforestry technologies that were sidelined by big timber, keeping underground systems intact while harvesting products above the ground through coppicing and pollarding, perennially growing their own firewood and building material. "We're talking about letting some of the trees come up in a bigger fashion," said Jonathan, "to see large hedges of chestnuts potentially making forest gardens." Silvopasture, for that matter, needn't be limited to domestic livestock. As Jonathan said, "We could also be planting fodder for the animals that are already there: mulberry, poplar, willow, black locust and stuff like that." Taking the longer view, and building on what they've begun, Jonathan and Cornelius are moving toward



At the entrance to Silver Run Forest Farm in Keezletown. (Photo by Mary Hufford)

establishing land trusts, crafting bigger alliances for scaled-up plant propagation, and cultivating bioregional seedbanks and cultural arboretums that mix annual and perennial selection.

And, as they plan for the future, they draw inspiration from their primary mentors, the trees that model the connection between soil care and soul care. "There's so many things in a tree," reflected Jonathan, "that helps with this language, you know, just like a seed sprouting for future generations, but drawing on deep instilled wisdom and . . . what we're feeding is whatever is the heart of that tree. That's what we're feeding and that's our soul. That's our community. That's ourselves. . . .We're actually trying to feed the holy, you could call it."

-Written by Mary Hufford

Silver Run Forest Farm  
Email: [silverrunforestfarm@gmail.com](mailto:silverrunforestfarm@gmail.com)  
Website: <https://www.silverrunforestfarm.org>

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*This publication was made possible through a grant from the  
USDA National Agroforestry Center.*



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# Branching Out: Alternative Tree Saps Integrated with Agroforestry

*A Case Study By The  
Livelihoods Knowledge Exchange Network*

## BACKGROUND

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

## THE LAND

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



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



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

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

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

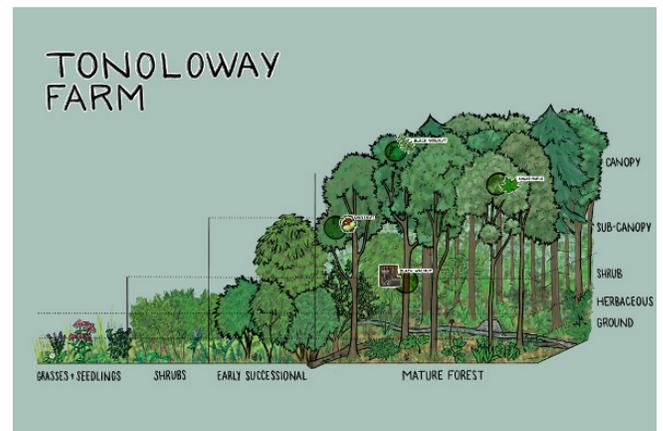


Once mature, the chestnut plantation will help conserve the soil on the ridgetop while diversifying the products offered at Tonoloway. Photo by Tom Hammett

## FARM FORESTRY MANAGEMENT AND PRODUCTION

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

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



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

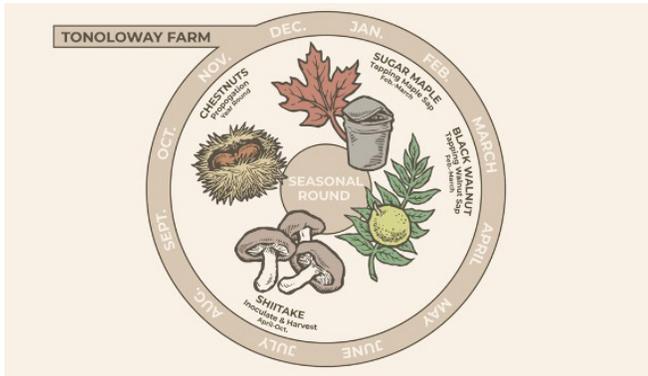
maple syrup, and really wants to make a living from it, one would need to tap four or five thousand trees, and need to process 1000s of gallons per day. . . .What’s cool about walnut syrup is -- on a phenomenal day I’ll get 300 gallons of black walnut sap. In the maple syrup business 300 gallons would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

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

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

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

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



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

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



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

## MARKETING

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

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



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

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

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



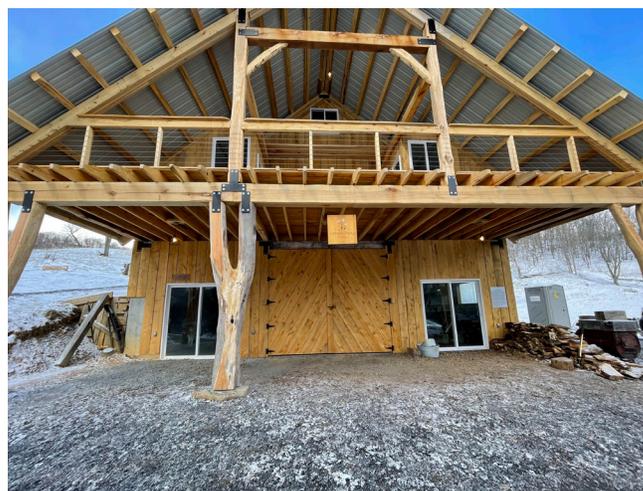
Will Shepard, Tonoloway Farm manager, with Christoff Herby in their shop, where visitors were able to sample walnut, maple, hickory, and cider flavored syrups offered by Tonoloway during the 2022 Highland Maple Festival. Photo by Daisy Ahlstone.

## FUTURE PLANS

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

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

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



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

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

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

*—Written by Tom Hammett*

Tonoloway Farm  
9943 Highland Turnpike,  
McDowell, VA 24458  
Email: [TonolowayFarm@gmail.com](mailto:TonolowayFarm@gmail.com)  
Website: <https://www.http://tonolowayfarm.com>

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*This publication was made possible through a grant from the  
USDA National Agroforestry Center.*



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# Yew Mountain Center

*A Case Study By The  
Livelihoods Knowledge Exchange Network*

## BACKGROUND AND TRAINING

Growing up in Lewisburg, West Virginia, Will Lewis developed a keen interest in medicinal forest botanicals, along with a growing awareness of the need to steward both knowledge of, and habitats for, the botanical diversity so distinctive to Central Appalachian Forests. "I come from people that have been in West Virginia for many generations," Will said. "And my mother grew up on the land and they grew their own food. And you know, before forest farming was a thing, that's just what people did in West Virginia. That's how they lived. . . . And I just started having a passion about it in high school, growing food. In college I studied horticulture with an emphasis on sustainable agriculture, and just fell in love with plants in general, and since college, I have worked on various farm projects and just kind of grew into medicinal plants. . .and making my own medicine."

With Erica Marks, he helped establish the Yew Mountain Center in Lobelia, WV, as a forest farming demonstration site, educational hub, and seed source for aspiring forest farmers in Central Appalachia. The Yew Mountain Center provides an educational hub and resource center for aspiring forest farmers in West Virginia. To speed up the cultivation of agroforesters in the state, Will Lewis has worked with agroforestry leaders throughout the region, including Ohio's Rural Action, Virginia Tech, and Appalachia Sustainable Development's Herb Hub. Yew Mountain Center's production of medicinal botanicals is designed to facilitate its primary objectives of teaching and supplying plant stock to those who want to start their own agroforestry businesses.

## CULTURAL VALUES AND MEANING

Will Lewis recognizes the strong cultural ties between people and the forests of West Virginia. Over the past



**"One of my favorite things about farming is being able to step back and view the whole system and be able to work with all the pieces of that system too – it's kind of a beautiful thing about agroforestry."**

–Will Lewis

two centuries, the management of the region's natural resources for coal, timber, and intensive agriculture have affected the region's biodiversity. People employed by coal and timber industries often provided for their households by hunting, fishing, and harvesting understory botanicals for sale in global markets. These practices, signaled in place names like "Seng Creek" and "Root Camp Hollow," are highly valued as recurring occasions for spending time in the woods with family and friends, while meeting economic goals. Over many generations, in woodland communities the plants themselves have become iconic of such values and opportunities.

The global demand for roots of medicinal botanicals like ginseng, black cohosh, and yellow root

(goldenseal, *Hydrastis canadensis*), as well as foods like ramps, puts pressure on those populations. The ginseng harvest is now regulated by the US Fish and Wildlife Convention on International Trade in Endangered Species (CITES), and there is rising concern about the continuing availability of other high value roots. Conservation policies can have an impact on the historically deep culture surrounding hunting and foraging. Expanding market demand beyond the roots to aerial parts of valuable medicinal plants, agroforestry can facilitate a shift that is both culturally and ecologically sustainable. Toward that end, and in the spirit of citizen science, Will Lewis is exploring horticultural methods that can boost the populations of these plants, while enhancing the potential for products that keep roots in the ground.

Ramps are widely celebrated in the mountains as the first wild greens to emerge in spring. In recent decades, their rising popularity in metropolitan areas has put pressure on populations of wild ramps. As with ginseng and goldenseal, the leaves of ramps could be harvested and used or consumed without extracting the roots. Unlike ginseng and goldenseal, ramps produce and lose their leaves months before they bloom and go to seed. While many mountain communities hail the emergence of ramps in the spring by feasting communally on the tubers and greens, Will Lewis watches for the seeds in late summer/early fall, which he collects in order to plant and distribute to agroforesters propagation. At the same time, he has transplanted ramps from the higher altitudes they prefer closer to the road, in order to educate the visiting public about the life cycle, ecology, and conservation of ramps. Ramps open a portal onto the complexities of agroforestry in a zone of microclimates, helping to illustrate the role played by elevation, aspect (north-facing slopes are cool and moist; south-facing slopes tend to be dry and warm), and drainage. Stopping at a ramp patch on a tour of the beds, Will begins: "So this patch of ramps here was transplanted two springs ago. These were transplanted bulbs that are now flowering, producing seeds. We have a bigger patch of ramps up on the mountain. It's probably 3,200 feet. It's on a direct south-facing slope which is rare, but again showing the exceptions are always there, especially when you get higher up in the mountains. It's still cool and moist up there, so ramps like it. We brought these down closer just to be more accessible and to spread our ramp populations around."

In late July, ramps illustrate the importance of seed collecting in Central Appalachian agroforestry. "And you can see here that we're producing seed right now," Will continues. "The seeds are still a little young with those green husks. We'll wait for those to brown out

and then they'll kind of crack and you'll see a black shiny seed coming through. Once that seed starts to dry, then that seed is ready to be harvested. And



*Ramps going to seed in late August, Randolph County, WV.  
Photo by Mary Hufford.*

really, for anyone that's trying to do some bigger ramp production, if you've got time, but not labor, I recommend starting by seed."

Thus Will locates the beds along the sides of the road built by the previous owner, with an eye toward a cultural shift needed for the sustainability of understory medicinal botanicals in the region. Such a shift will support the high value on spending time in the woods on activities that are ecologically and economically regenerative. What opportunities open up when we leave the roots in the ground? Instead of focussing on how to produce roots for extraction, how can we maximize seed production to jump start forest farming of ginseng, goldenseal, and ramps in Central Appalachia? How can we meet the growing demand for leaves, shown by researchers to have medicinal value? Instead of extracting roots, how can we partner with them to build a system of perennial forest crops?

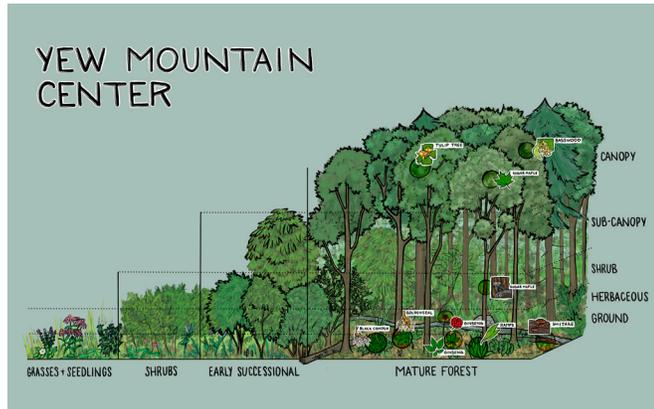
"The plants teach you," said Will.

## **ECOLOGICAL DYNAMICS OF THE SITE**

Yew Mountain Center's five hundred acre property harbors many of the habitats in which agroforestry may be practiced in Central Appalachia. As a form of multi-tiered agriculture, agroforestry can utilize multiple levels of the mixed mesophytic forest with attention to how reciprocities among canopy, subcanopy, herbaceous, and soil layers enhance crop production. How can the agroforester enter into a system governed by complex long-term relationships among its components? "You got the trees," said Will. "You're getting some of their benefits – maple

syrup. You got the plants underneath, you know, you get the bees that are pollinating and collecting nectar from all those. You got the mushrooms which work in a system that are very crucial to making new soil and breaking down, making wood into fertilizer for these plants. And so working with that kind of whole system dynamic where you have little pieces all throughout it is important."

—Will Lewis



Layers and stages of succession offered by the Central Appalachian mixed mesophytic forest, supporting agroforestry at the Yew Mountain Center. Artwork by Carly Thaw.

He cautions that the beginning agroforester should not try to tackle the entire system at once. "I really encourage people to take their time. We introduced one thing a year, or every other year because it is overwhelming, especially when you're learning these things. There's a lot to know about each system and I spent many many years studying all these things before I even started doing the work."

Will Lewis relies on spaces maintained out of the public eye to preserve native populations of medicinal botanicals, which supply seed stock for the demonstration beds established close to roads and trails for teaching. Placement close to the roads helps fulfill YMC's public education mission, and its ongoing research into the horticulture of native medicinal plants. "Our goals are for quick root production to sell as planting stock," Will explained on a tour of the beds. "So I wanted to do tilled beds next to a road and brought a tiller in here. I chose this spot for a few reasons. One, you can see there is thicker growth. . .right under this really nice sugar maple here. And sugar maple is a good companion tree. These trees are also older, more mature. So that kind of indicates a healthier soil. So we have that aspect. There wasn't a whole lot of competition. . . [And] we have it next to the trail where we walk and do classes, so it's easy for people to see production beds."

Experimenting with light and soil structure, Will is establishing tilled beds in places with varying amounts

of shade to see whether goldenseal can be coaxed to yield more roots for planting stock within a shorter time frame. "If we put a tilled bed of goldenseal in here with more light, how's it gonna differ from this spot up here with more shade? Always just trying to learn and listen to the plants and what they say and what they do."



Shiitake mushroom logs on the campus of Yew Mountain Center, located streamside for periodic soaking. Photo by Mary Hufford.

As hive inspector for beekeepers throughout West Virginia, and a beekeeper himself, Will Lewis appreciates the reciprocities of bees with the biologically diverse canopy of the mixed mesophytic forest system. "I think one of the unrecognized products of our woods is honey," he said. "A lot of our tree species here give crops of honey. A lot of our trees, when they flower, produce active excellent nectar flows. Right now, as we speak, there's an amazing basswood flow coming in. Higher up in the mountains we have a lot of basswood. Lower parts of West Virginia have more sourwood. . .which is also kind of finishing up right about now. . . a really revered honey source. But also in the spring you get black locust [which makes] an incredible clear honey. Poplar [makes] a darker honey -- we got a pretty good flow of that this past spring. Black cherry had an excellent bloom this year, too. Even the maples in the spring, one of the best pollen sources in March, both the red and the sugar maple."

Beekeeping thus offers a way to produce multiple varieties of forest honey while contributing to the pollination of Central Appalachia's distinctive canopy species.

"I think one of the unrecognized products of our woods is honey," he said. "A lot of our tree species here give crops of honey. A lot of our trees, when they flower, produce active excellent nectar flows. Right now, as we speak, there's an amazing basswood flow coming in."

—Will Lewis



Will Lewis, whose business is called "Blessed Bee Honey," working in his bee yard. Honey produced by bees pollinating the flowering canopy of the mixed mesophytic forest is a significant non-timber forest product. Photo by Mary Hufford.

## LAND TENURE AND VALUES OF THE LANDSCAPE: HISTORICAL AND COMMUNITY CONTEXTS

The land has been through a series of private owners, each with plans that had to be abandoned. One of the owners, a retired coal executive, began developing it



Signs at a trailhead, Yew Mountain Center. Photo by Mary Hufford.

as a hunting getaway, with plans to put in a vineyard and to grow ginseng. "He put all the roads up on the property," said Will. "And there's several ponds on here that he put in with his equipment. And then I think he went bankrupt. . . . And now a lot of the roads that we use, you know, they're nice, wide roads. . . which is really handy for us and our purposes here. A lot of them are great trails that go all the way up the mountain."

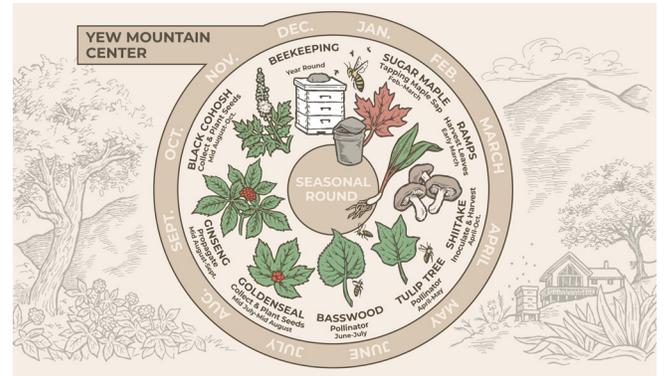
Erica Marks and Will Lewis recognized that their neighborhood has a stake in what becomes of its landscapes. In planning for the Yew Mountain Center's conservation program, Will Lewis and Erica Marks prioritized local community values. "This land has always been a community spot," said Will. "We all like to go swimming in this pond. And it was gonna go up for auction. It's a big property. And we were concerned that someone would come and just timber it, which would be sad, and also not let the community come here. And now our kids and people go swimming in the pond, and we can host potlucks, events, and music nights here at the lodge."

They worked on a plan that would bring to fruition Erica's dream of founding an alternative outdoor educational school. Will remembered, "I'm like,

'Alright, let's try to find someone to buy this property and let us have a school here.'" With funding from the Sacharuna Foundation, they were able to transition the foundations for a private hunting reserve into infrastructure for outdoor education. Their approach maintained the integrity of landscape and local community life, ensuring its continuing connection to regional history and ecology.

"This land has always been a community spot. We all like to go swimming in this pond. And it was gonna go up for auction. It's a big property. And we were concerned that someone would come and just timber it, which would be sad, and also not let the community come here. And now our kids and people go swimming in the pond, and we can host potlucks, events, and music nights here at the lodge."

—Will Lewis



Components of the seasonal round of agroforestry at the Yew Mountain Center. Artwork by Our Numinous Mind.

February we'll be making maple syrup. In the spring you can do some planting, we typically do more fall planting here. The spring is a good time to inoculate mushroom logs if you're trying to do that, and also cooking down your syrup. Selling your sap is another option if you don't want to spend time cooking it down - summer is tending the forest botanicals - weeding and stuff like that; the bees are big in summer - that's when they make a lot of their honey - spring, summer. . . . And then fall is. . . when plants start to die back, and so that's when you can dig them up, make your root divisions, or purchase planting stock. . . fall is a good time to do that. Or for the ramp seed you know that's kind of later summer - August September. . . Fall's the time for planting things. You can do fall plantings for your fruit trees and nut trees, if you're doing those. Spring's a good time to do that as well, but forest botanicals easily do fall plantings whether it be by seed or root division."

Distributing the work across the variety of times and spaces offered by the Central Appalachian mixed mesophytic forest can be a way of hedging bets in the face of dire weather events and fluctuating markets. "It creates a little more resiliency," said Will. "If you don't have a good crop of mushrooms that year or all of a sudden your buyer isn't there, you've got something else to sell. But it does take more knowledge to manage each of those parts of that whole system."

## VALUES BEYOND THE SITE: NETWORKS, EDUCATION, AND KNOWLEDGE EXCHANGE

As host to the West Virginia Forest Farming Initiative, the Yew Mountain Center has taken a leading role in that state, providing start-up resources for new forest farmers, and working with seasoned forest farmers to develop resources needed for expanding on existing practices.



Music around a campfire at the Yew Mountain Center, during Forest Farming Field Days in May 2021. Agroforestry instructor John Munsell, of Virginia Tech, on bass, Will Lewis on guitar. Photo by Mary Hufford.

## VALUES OF THE ACTIVITIES: LABOR AND LIVELIHOOD

Because plants are their coworkers, agroforesters can synchronize cycles of tending and harvesting various crops with the life cycles of forest species, spreading the work out over the course of the year.

Will Lewis described the annual round he follows for Yew Mountain's forest farming program. "January

"We've been forming a network of forest farmers with the help of our various partners," said Will Lewis, "that have really helped us get this far. They've taught me a lot about the work that I do and trained me to do site assessments... so that we can promote the growing of these foresters, so people can make money on their land from forest botanicals, as well as other forest farm products."

With funding from Sacharuna Foundation and the Claude Worthington Benedum Foundation, YMC has offered free site assessments along with planting stock at affordable rates. Participating in a network of Central Appalachian organizations, including Rural Action and United Plant Savers (southeastern Ohio), Appalachian Sustainable Development Initiative (southwestern Virginia), and Future Generations (West Virginia), the Yew Mountain Center provides services for beginning forest farmers that are not yet available through state agencies. The network itself provides access to experience with various aspects of the growing field of forest farming that would not be available within any one of the states alone.

## FUTURE PLANS

Like trees continually engaging partnerships within their habitats, Yew Mountain Center is soliciting partners in forest farming throughout the region, thereby broadening the economic, ecological, and social potential for an agroforestry that is distinctive to Central Appalachia. As long as interest in agroforestry continues to grow in West Virginia, Yew Mountain Center will be there meeting the needs of aspiring forest farmers for both education and planting stock. As Will Lewis puts it: "Find someone to work with. Don't do it on your own, don't try to reinvent the wheel.

**"Find someone to work with. Don't do it on your own, don't try to reinvent the wheel. Come to us, come to anyone else that's been doing this. A lot of farmers love having someone to help them and you can give them a hand and help their operation out. Whether you get paid or not, you're going to gain a tremendous amount of wealth as far as knowledge and experience."**

–Will Lewis

Come to us, come to anyone else that's been doing this. A lot of farmers love having someone to help them and you can give them a hand and help their operation out. Whether you get paid or not, you're going to gain a tremendous amount of wealth as far as knowledge and experience. Try it out. Get your hands dirty. And then go out and do it too!"

–Written by Mary Hufford

Yew Mountain Center  
9494 Lobelia Road, Hillsboro, WV 24946  
Phone number: 304-653-4079  
Email: [info.yewmountain@gmail.com](mailto:info.yewmountain@gmail.com)  
Website: <https://www.yewmountain.org>

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*This publication was made possible through a grant from the  
USDA National Agroforestry Center.*



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# Festival & Farmers' Markets

*A Guide to Educational Resources  
for Appalachian Agroforestry by the  
Livelihoods Knowledge Exchange Network*

## BACKGROUND

Landowners integrating farm forestry to their landscape need options for economic benefits (increased income, better livelihood opportunities). Before landowners will fully embrace agroforestry, identifying opportunities for increasing markets for agroforestry products. This is critical to sustaining any nature-based enterprise and important for technical service providers who advise landowners. Participating in festivals is an excellent opportunity. Providing markets is a natural first step to encouraging landowners to adopt agroforestry. Agroforestry is a burgeoning practice that is gaining recognition. Environmental professionals and service providers now realize that an important incentive for agroforestry adoption and expansion is to address economic opportunities along with the biophysical resources. For most landowners, seeking and supplying often distant markets is complicated and not feasible. Service providers helping landowners establish or increase markets should consider festivals.

Festivals are community or farm based events that offer important local market opportunities for landowners as they need not travel to markets, but customers come to their location. Festivals are seasonal and held on one or a few days, so the investment of time can be reasonable. Festivals offer visibility for your product as there are often scores of festival visitors. Typically festivals are tied to local heritage (cultural traditions), hosted by a single landowner or community. One example is the annual Highland County Maple Festival where local maple syrup producers have sold most, if not all, of their annual syrup production, and many more agroforestry products - besides just maple syrup.

Festivals do not have to be focused solely on maple syrup - the example portrayed here. In the region, other areas have conducted festivals - the Mount Rogers Volunteer Fire Department yearly conducts three festivals - one that features ramps, another that highlights the area's sorghum production, and a third one focuses on the area's maple syrup production heritage. Festivals or agritourism not only bolster local economies, but they engage local stakeholders, celebrate a sense of collective identity, and help the public to recognize agroforestry and its contributions (see Rivers et al. 2014). In fact the role played by volunteers in festival development suggests that conviviality is as high a priority as economic gain. We have included a sample of these festivals below.



*The sale of baskets from forest products during the Highland Maple Festival. Photo by Tom Hammett*



*Tim Duff demonstrating the evaporation of maple sap into syrup for visitors to the Highland Maple Festival in March 2023. Photo by Tom Hammett.*

## OTHER MARKET-BASED OPPORTUNITIES

Agritourism offers visitors the opportunity to visit and experience agriculture and other land-based activities, and raises visitor awareness about agroforestry systems. Visitors to Laurel Fork Sapsuckers in the Spring and Summer can see signage focused on other agroforestry activities such as NTFP intercropping planted under their sugar maples (i.e., ramps, black cohosh, ginseng, and goldenseal). State and local fairs offer opportunities for raising awareness about and help develop markets for agroforestry products and services. In the past these fairs had recognized a way of life found in the region, and celebrated the results of the harvest season.



Patrons of the annual Pine Knob Ramp Supper, Naoma WV. Photo by Lyntha Scott Eiler.

During the harvest season (April) community members collect ramps to supply fundraising meals. Here patrons enjoy the annual Pine Knob Ramp Supper on Drews Creek, West Virginia. (source: Library of Congress, Photo by Terry Eiler 1995)

To further encourage agritourism visitors, Laurel Fork Sapsuckers has built an event building in their maple sugar bush for hosting festival guests, showcase their products (i.e., products on their land from maple, ramps, elderberry) and educational displays. A guest house is now being constructed to accommodate overnight visitors and increase income to the farm.

Forest farming field days are festive educational day-long or multi-day events. Both the Yew Mountain Center and United Plantsavers have hosted these important educational events – check their websites for more information.

Farmers markets, some of which feature agroforestry products and artwork focused on non-timber forest products – i.e. the farmers market in Franklin, WV, the Athens Ohio Farmers Market, and others. These are outlets for products and opportunities for education and knowledge exchange.



Visitors at the Highland County Maple Festival sample types of syrup and get details on each. Photo by Tom Hammett.

Over sixty years ago, maple syrup producers in Highland County, VA sought to raise awareness of and market the maple syrup they were producing. They opened their farms to show the production process - from tree to bottle - and to showcase their products, increasing their income, and educating consumers about real maple syrup and how it is produced. Over the past 60 years the festival has grown to include music, arts and crafts, and food (pancake breakfasts, and dishes that include maple syrup) - all raising funds for local organizations. It is now the largest maple syrup festival in the USA with over 26,000 attendees during the two weekends.

The festival has more recently been led by the Highland County Chamber of Commerce assistance including developing signage, organizing press coverage, and providing support for advertising. Many aspects of the community garner support from participating in the festival: scholarships for graduating seniors, welfare assistance in the community, support for civic clubs (eg. Rotary Club) all benefit from the festival. Thousands of maple donuts are produced by members of local clubs and school groups - many visitors buy dozens to bring home. There are only a few overnight accommodations (few bed and breakfasts, and AIRBnBs), so many are day visitors. Vendors and maple syrup producers are proactive (putting up signage, publishing a map of all the stops). Some visitors travel from as far away as Charlotte, Richmond, and Washington, DC. Four local civic groups offer breakfasts to the tourists - their only major annual fundraiser. Grants from USDA and State of Virginia have helped collect data on the visitors and the economic impact, focus for outreach, and help producers improve efficiencies. Open to

the public with active syrup making for two full weekends in March. The festival includes several venues that feature local crafts and foods providing additional income to the local economy beyond just syrup.

Landowners in Highland County who had opened their farms for the Festival during March realized the value of the Festival and showed interest in selling other farm products or services. The Highland County Chamber of Commerce now organizes several other annual agritourism events focused on other products and attributes of Highland County. For instance, tourists come to Highland County for the Hands and Harvest Festival (every year during October), open house at the Allegheny Farm (August), and Taste of Highland (July) can sample and buy other agroforestry products.

## ORGANIZING ASSISTANCE TO LANDOWNERS

A growing network of nonprofits and farms in Central Appalachia is providing crucial knowledge transfer. Some have felt that extension and academic entities were not effectively reaching landowners in Central Appalachia. For many the first stop is to consult with neighbors to learn what understory botanicals grow best in the area, and what strategies have been tested for encouraging them. Non-profit organizations and peer learning networks have been effective in re-establishing understory botanicals. Several of these organizations gain income from education and other services.

As a starting point, we highlight here eight organizations in Central Appalachia who offer help for those interested in establishing or expanding understory botanicals. There are several other organizations that one could also consult.

## AGROFORESTRY RELATED FESTIVALS AND EVENTS - SOME EXAMPLES

Several Fall harvest festivals include agroforestry - sunflower, wine, grape, frontier life, wood, apple, and several others are common in the region. Visitors add resources to the local economy, learn about other opportunities to visit the area, and importantly buy the seasonal products (i.e., maple syrup) and increase awareness about the production and availability of agroforestry resources. State agencies realize the economic benefit of festivals and other events, and provide resources and information that encourages visitors. For instance West Virginia Department of Tourism provides access to agritourism activities:

<https://wvtourism.com/things-to-do/arts-culture-history/farm-to-table/agritourism/>

# Highland County Maple Festival 2022 Impact Report: Summary



Photo from the Highland County Chamber of Commerce

### Key Findings

- The festival generated **between \$1.36 and \$2.02 million** in spending in Highland County
- About 26,500 visitors attended
- The average visitor spent between \$15 and \$22 at sugar camps

### Visitor Information

- Visitors on average traveled 98 miles to attend the festival
- 85% of visitors were from Virginia
- Visitors from 14 states attended
- Over 70% of visitors were repeat festival attendees
- Returning visitors on average attended the festival 13 times
- Over 90% of visitors said they are planning to attend the festival again

### Other Information

#### Visitor's Favorite Activities

- Favorite activity for 42% of visitors was sampling maple products
- 23% of visitors said their favorite part was visiting arts and crafts vendors
- 21% said their favorite activity was learning about maple syrup

#### Promoting the Festival

- 59% of visitors heard about the festival through word of mouth
- The next most common way people heard about the event was via social media (19% of visitors)

#### Other Impacts

- 73% of visitors were interested in visiting the area during another season
- Visitors were 21% more likely to purchase maple syrup after attending
- 20% of visitors learned what real maple syrup was during the festival

### About the Report

This document includes key findings from the Economic Impact Report for the 2022 Highland County Maple Festival created by Virginia Tech. The report was created with support from the Highland County Chamber of Commerce and Future Generations University. This work is funded through a USDA ACER grant: "Accessing South Atlantic markets for US Maple Syrup: educating consumers and enhancing distribution networks". Information comes from surveys conducted during the event with visitors and vendors. If you have any questions, please contact Daniel Grizzard at [danielg2@vt.edu](mailto:danielg2@vt.edu).



Future Generations  
University

*The economic impacts of the Highland County Maple Festival shed light on the potential for other events based on farm forestry. Source: Grizzard and Hammett 2022.*



*Agroforestry related festivals and other such events offer opportunities for visitors to learn more about agroforestry and purchase farm forestry products. Photo by Tom Hammett.*

Here are a few examples of festivals based on a variety of farm forestry or agroforestry products:

## Black Walnut

The West Virginia Black Walnut Festival is held every October in Spencer, West Virginia. Raising awareness of black walnuts and their potential, this traditional agriculture fair features a variety of activities including a "Nut Run", parade, food court, and farm products. Visit: <https://www.wvblackwalnutfestival.org/>

## Chestnut

To meet market demand chestnuts have had to be imported and as such require need sanitation treatment before sale/use here. In response to this emerging market several farms have been planting chestnuts (for example see Tonoloway Farm scenario). The Chestnut Festival in Rowlesburg, WV features sharing of science related to chestnut, sale of saplings, and exchange of recipes. Visit: <https://wvchestnutfestival.com/>

## Maple syrup

Organized by the West Virginia Maple Syrup Producers Association, Maple Days offers producers an opportunity to host visitors so they may learn about real maple syrup production and purchase products. On the third Saturdays in February and March visitors from several states can visit several maple sugar camps. Information and a link to a map of the camps that are open can be found at: <https://wvmspa.org/>

## Mushrooms

The Mountain Mushroom Festival is held in Irvine, Kentucky. From the website: Activities include a morel market, cooking demonstrations, educational panels on mushroom foraging, mushroom cook-offs, and mushroom production demonstrations. Visit this website to learn more: <http://ww7.mountainmushroomfestival.org/>

## Pawpaw

The pawpaw (*Asimina triloba*) is North America's largest edible native tree fruit with a creamy texture and a tropical flavor. Southern Ohio is noted for wild pawpaw patches. Several festivals and events showcase the tasting, growing and preparing of pawpaws. Ohio Pawpaw festival in Albany, Ohio. Visit: <https://ohiopawpawfest.com/>

During October, the JBR Vineyards and Winery in Giles County, Virginia invites visitors to their

site to sample and purchase a variety of Paw Paw products. Visit their website to learn more: <https://jbr-vineyards-winery.business.site/>

West Virginia also hosts a pawpaw festival: <https://arboretum.wvu.edu/wv-pawpaw-festival>

## Ramps

Over a dozen West Virginia communities host ramp dinners -events that raise funds for churches, and civic projects. These meals and other events are usually held during the month of April when ramps are harvested. Harvesters also set up roadside ramp stands in March, April, and May, allowing motorists to grab a bag or bundle ramps as they travel through (see Hufford 2006). States recognize the importance of these events and some market them widely. For example visit the West Virginia Ramp Dinners & Festivals website: <https://wvexplorer.com/recreation/agritourism/ramp-dinners-festivals/>

The Mount Rogers Fire Department in Virginia also hosts a yearly weekend-long ramp festival in late spring featuring music, locally produced arts and crafts, and ramp dinners and a ramp eating contest. The funds raised by this festival and two others - the maple usually held in March and the sorghum festival normally held in the fall (see below) - help support equipment purchase and maintenance for the Mt. Rogers community area.

## Sorghum

Festivals featuring sorghum are few but important to local communities. The Mount Rogers Fire Department (Virginia) yearly hosts a molasses festival in October. The West Virginia Molasses Festival has been held in Calhoun County annually in late September since 1967. And for over 50 years The Sorghum Festival, in Morgan County, Kentucky has attracted many visitors to engage with local producers, and learn about this traditional activity. Learn more at: <https://www.morgancountysorghumfestival.com/>

—written by Tom Hammett

## RESOURCES

Chesky, Anne. 2009. Can Agritourism Save the Family Farm in Appalachia? A Study of Two Historic Family Farms in Valle Crucis, North Carolina. *Journal of Appalachian Studies*. Vol. 15, No. 1/2 (Spring/Fall), pp. 87-98.

Grizzard, Daniel and A.L. Hammett. 2022. Economic Impact Report of the Highland Maple Syrup Festival. Report prepared by Virginia Tech.

Hammett, A. L. 1998. Improving markets for farm forestry products. Fact Net FACT Sheet 98-02 Morrilton, Arkansas. Winrock International. 2 p.

Heppy Organization lists several festivals that occur throughout the region. <https://heppy.org/paw-paw-festival/> and has information on pawpaw and 400 other edible plants found in the region.

Highland County Chamber of Commerce. Highland County Virginia

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This publication was made possible through a grant from the  
USDA National Agroforestry Center.



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# Understory Botanicals and Eatables

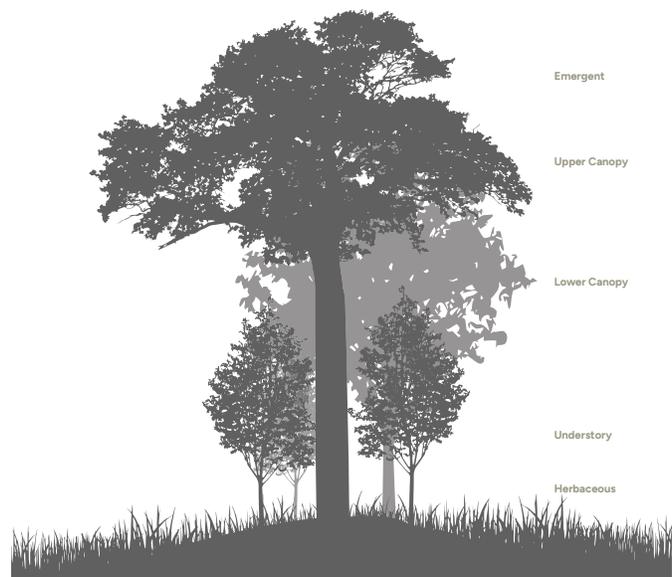
*A Guide to Educational Resources  
for Appalachian Agroforestry by the  
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## OVERVIEW

The purpose of this series is to describe particular production systems for small holdings in Appalachian cove forests. In this scenario, we will describe how to use the forest understory to grow forest botanicals for nutrition and health uses, and as a source of income. There are numerous examples of understory plants that can be grown in the region - each of which can contribute to income and nutrition and sustain the landscape. Agroforesters recognize and celebrate the historical legacy these plants represent for residents in the region.

## BACKGROUND

The Central Appalachian forest has long been an important source of many botanical products, with nutritional and medicinal values – such as ginseng, goldenseal, black cohosh, ramps (wild leeks), elderberry, and paw paw. Yet, the commercial potential of the high biodiversity of this ancient and productive Appalachian forest remains widely underappreciated. Steadily increasing prices and market demand have set the stage for understory cultivation, which complements other land-based activities such as maple syrup and timber production, and enhances ecosystem services such as flood control, watershed improvement, agritourism and recreation. Integrating forest botanicals into existing land management strategies is appropriate for those wishing to transition to agroforestry, as many forest botanicals can be an early and fairly dependable source of income. In addition, returns from quickly established forest botanicals can fund later stages in agroforestry that take longer to establish.



Forest botanicals appeal to a wide range of landowners managing tracts of varying sizes. For instance, owners of low income, small scale farms may be looking for additional revenue sources to cushion them during hard times, whereas larger scale operators may be seeking bigger revenue streams. Some are opting to conduct value-added processing on site while others may take advantage of processing facilities such as the Appalachian Harvest Herb Hub in Duffield, Virginia, or the deep historical network of non-timber forest product buyers throughout the region.

There are strong networks already in place for marketing, innovative product development, and sharing knowledge. Reviewing the workshops offered by Yew Mountain Center and other organizations reveals a set of priority areas - focusing on current landowner needs and finding ways to improve agroforestry adoption.

## IN-THE FIELD PRACTICES

Three species found in the region's understory exemplify high value forest botanicals. Ginseng (*Panax quinquefolia*) has been harvested and exported from this region for centuries, while there has been in recent decades a growing demand for goldenseal (*Hydrastis canadensis*), and black cohosh (*Cimicifuga racemosa*). All three are native to Central Appalachia and have traditional markets, local, regional, and global. Many of these plants (i.e., ginseng) have such high value that they are subject to theft. Hence, it is important to consider where to plant species that are vulnerable to poaching.

There are also understory plants and crops that are not in as high demand as the forest botanicals. Ramps, elderberries and Paw paw are examples that landowners can incorporate without fear of poaching. Ramps (*Allium tricocum* Ait.) are native to the region. Also known as wild leeks in northern areas, the bulbs and greens have a strong smell and taste (Chamberlain, Beagle, and Connette 2014). The plant is the focus of agritourism (festivals and economic development) in the region with several ramp festivals bringing tourists to eat ramp cuisine and learn about this important forest-based resource. These festivals raise awareness of the natural heritage and how it is vital to economic development in the region.

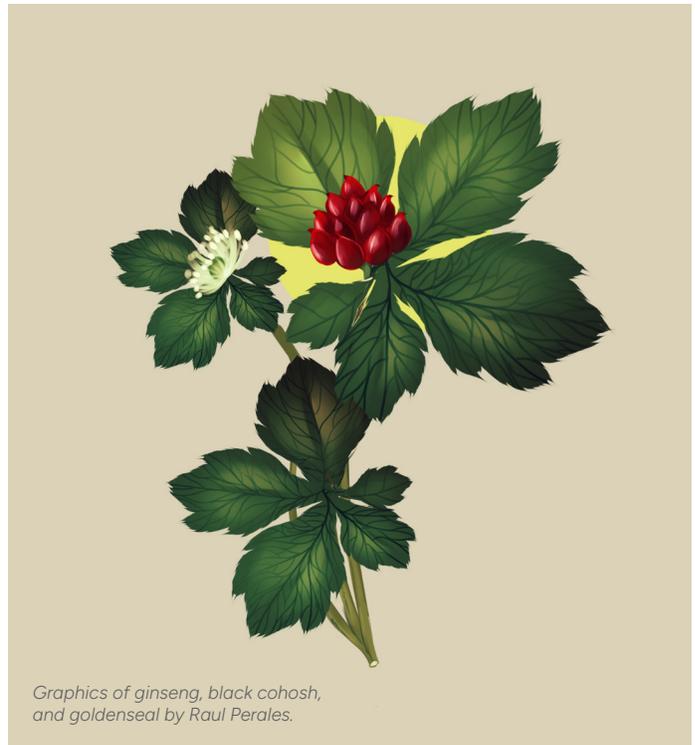
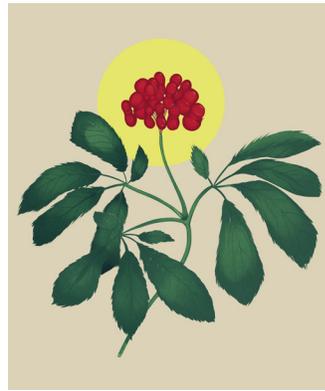
Elderberry has great potential in many areas as it is easy to propagate, relatively fast growing, and there are several ways to utilize fruiting. Several articles, case studies and guides are available (i.e., Brodt 2020) that show its potential.

Paw paw (*Asimina triloba*) Integration Acres and other organizations in the region offer expertise and markets for Paw paw. A small tree, Paw Paw regenerates easily on moist sites through root runners. Sometimes called Indian Bananas, these small trees provide tasty fruits and are highly nutritious (Matthews 2023).

## INTEGRATING DIVERSE PLANTS INTO INTENSIVE PRODUCTION PRACTICES

We have found that successful forest farmers in the region use diverse strategies adapted to variegated environments and management goals. Many farms draw on legacies of local knowledge and traditions that have endured over a long history of non-timber forest product stewardship and harvesting in Central Appalachia.

For instance, Shady Grove farm (in Mill Creek, West Virginia) has developed a production system that integrates traditional foraging practices with emerging understory botanical horticultural



Graphics of ginseng, black cohosh, and goldenseal by Raul Perales.

practices such as woods-cultivated production (see The Forest Farmers Handbook produced by Rural Action and United Plant Savers in 2019). They also conduct educational experiences for new forest farmers, which provides an additional source of income. (For more information, see LiKEN's "Shady Grove Botanicals Case Study")

A different mix of production practices is exemplified by Laurel Fork Sapsuckers forest farm in Hightown, Virginia. Drawing on its legacy of managing forestland for timber, Laurel Fork Sapsuckers has begun utilizing selective timber extraction to improve their stand of sugar maples ("sugar bush"), thus encouraging increased sap flow with a higher yield of maple syrup. Thinning of sugar maple stands encourages crown expansion in the remaining maples, which increases sap flow and maple syrup production. Laurel Fork has also been transitioning these improved maple stands into habitat for understory botanicals. Seeds from ramps are spread in moist areas, and young plants are transplanted under sugar maple stands. Ramp leaves are now harvested

and sold in value-added products (i.e., dried and used to make ramp salt), which conserves the traditionally harvested tubers. Plots of goldenseal, black cohosh and ginseng seedlings have been planted to test the viability of these species in order to expand and diversify their forest botanical production. (Contact information is included at the end of this piece; for more information, see LiKEN's "Laurel Fork Sapsuckers Case Study"). The Yew Mountain Center also takes into consideration the location of sugar maples when planting stands of goldenseal and ginseng. It offers several examples of forest botanicals on-site, providing an important education venue. (Contact information is included at the end of this piece).

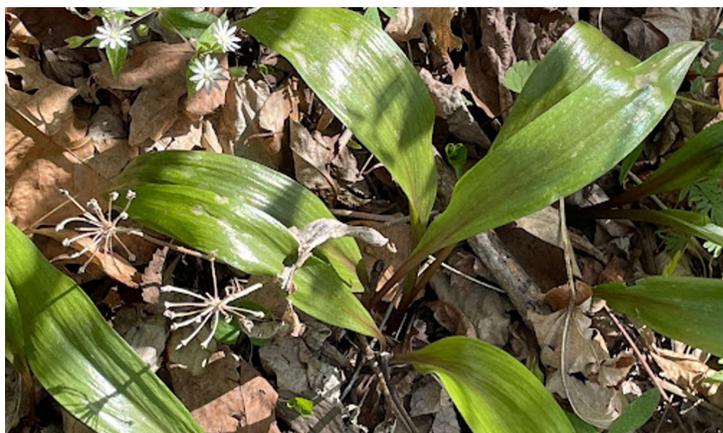
## TRANSITIONING TO UNDERSTORY BOTANICALS AND EATABLES

Before committing to growing understory botanicals, a landowner should complete an ecological site assessment to identify site characteristics and conditions capable of supporting native forest botanicals (see LiKEN's guide to "Socio-ecological Site Descriptions"). Determining the suitability of a site for forest botanicals depends on several factors including soils, aspect, rainfall, plant communities, drainage, light and shade requirements, and other local variables. Since some forest botanicals take several years to reach harvestable size, it is crucial to consider future markets for these plants. Learning about your property and its capacity to produce understory botanicals that thrive in local conditions is a starting point. If one is considering fostering understory botanicals, it is important to seek guidance from those who have direct experience and local knowledge of what is possible in your area.

## OPPORTUNITIES AND ORGANIZATIONS PROVIDING ASSISTANCE

A growing network of nonprofits and farms in Central Appalachia is providing crucial knowledge transfer. Some have felt that extension and academic entities were not effectively reaching landowners in Central Appalachia. For many the first step is to consult with neighbors to learn what understory botanicals grow best in the area, and what strategies have been tested for encouraging them. Non-profit organizations and peer learning networks have been effective in re-establishing understory botanicals. Several of these organizations gain income from education and other services.

As a starting point, we highlight here eight organizations in Central Appalachia who offer help for those interested in establishing or expanding understory botanicals. There are several other organizations that one could also consult.



Ramps, here with remnants of flowers, if managed, can provide a source of sustainable income and nutrition (Photo by Tom Hammett)



Native paw paw and persimmon trees for sale at the annual Paw Paw Fest, September 2021, Albany, Ohio. Photo by Mary Hufford.



Afrolachian agroforestry Ruby Daniels, presenting a workshop on making tinctures from understory botanicals at a Forest Farming Field Day in May of 2021 at the Yew Mountain Center in Lobelia, WV. Photo by Clara Haizlett.

<p><b>Yew Mountain Center</b>  9494 Lobelia Road  Hillsboro, WV 24946  www.yewmountain.org  info.yewmountain@gmail.com</p>	<p>The Yew Mountain Center is a key site for forest botanical stewardship, research, and educational outreach—integrating mushroom cultivation, beekeeping, and maple tree tapping with the propagation of forest botanicals, including ramps, goldenseal, ginseng, and cohosh.</p>
<p><b>Appalachian Sustainable Development</b>  280 Boone Trail Road  Duffield, VA 24244  (276) 623-1121  asdevelop.org</p>	<p>Appalachian Sustainable Development (ASD) fosters forest botanicals - specifically herbs - through outreach and educational activities and a Herb Hub that buys locally produced herbs for processing and sale throughout the region.</p>
<p><b>Rural Action</b>  8 North Plains Rd  The Plains, Ohio 45780  (740) 677-4047  ruralaction.org  info@ruralaction.org</p>	<p>Rural Action serves a large part of Central Appalachia. It hosts workshops, has personnel based in the field mentoring landowners, and has on-site forest farming examples.</p>
<p><b>United Plant Savers</b>  P.O. Box 147  Rutland, OH 45775  (740) 742-3455  unitedplantsavers.org  office@UnitedPlantSavers.org</p>	<p>United Plant Savers’ mission is to protect native medicinal plants, fungi, and their habitats while ensuring renewable populations for use by generations to come. They provide educational materials about production methods, such as their 2019 Forest Farmers Handbook.</p>
<p><b>Future Generations University</b>  400 Road Less Traveled  Franklin, WV 26807  (304) 358-2000  info@future.edu  future.edu/maple/</p>	<p>This program has been a leader in development of the region’s maple syrup industry. Their Reading the Woods program supports technical service providers (TSPs) who help landowners to adopt farm forestry and non-timber forest products.</p>
<p><b>Livelihoods Knowledge Exchange Network (LiKEN)</b>  109 Rosemont Garden  Lexington, KY 40503-1930  (859) 523-5056  likenknowledge.org</p>	<p>LiKEN takes a holistic approach to economic development - building on the region’s outstanding biocultural infrastructure and historical and cultural assets.</p>
<p><b>Integration Acres</b>  9794 Chase Road  Albany, Ohio 45710  (740) 698-2124  (740) 698-6060  integrationacres.com</p>	<p>Integration Acres is a diversified farm selling fresh pawpaws and plants and also offers forest-farmed, locally foraged crops like spicebush berries, black walnuts and ramps.</p>
<p><b>Turnrow Appalachian Farm Collective</b>  804 Industrial Park Rd Suite #2  Maxwelton, WV 24957  (681)507-5015  turnrow.localfoodmarketplace.com</p>	<p>Turnrow connects customers’ access to locally grown food from producers across Southern West Virginia, via an online Farmers Market that delivers to pick-up locations in Charleston, Lewisburg, Fayetteville, Talcott, and Greenville.</p>
<p><b>Laurel Fork Sapsuckers</b>  10677 Mountain Turnpike  Hightown, VA 24465  (540) 290-1676  laurelforksapsuckers.com</p>	<p>Laurel Fork integrates non-timber forest products in the understory of their sugar maple stands and hosts training and farm visits for those interested in sugar maple and understory botanicals.</p>
<p><b>Other organizations that support planning for and the development of understory botanicals include:</b></p>	<ul style="list-style-type: none"> <li>a. State and regional government agencies</li> <li>b. Cooperative Extension Service (a partnership between land grant institutions (i.e., West Virginia University, Virginia Tech, and Ohio State) and the USDA</li> <li>c. US Department of Agriculture (USDA) Forest Service</li> <li>d. Natural Resources Conservation Service (NRCS)</li> </ul>

## OVERVIEW

Appalachian Beginning Forest Farmers Coalition. Information provided to help landowners can be found at: <https://www.appalachianforestfarmers.org/> From their website: "The Appalachian Beginning Forest Farmer Coalition (ABFFC) is a network of forest farmers, universities, and governmental and non-governmental organizations that share a common goal of improving agroforestry production opportunities and farming capabilities among forest farmers. The collective aim is to increase awareness, capacity, and long-term viability through education, networking, and conservation."

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This publication was made possible through a grant from the  
USDA National Agroforestry Center.

Written by Tom Hammett



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