

# Understory Botanicals and Eatables

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

## 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 leaks 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.

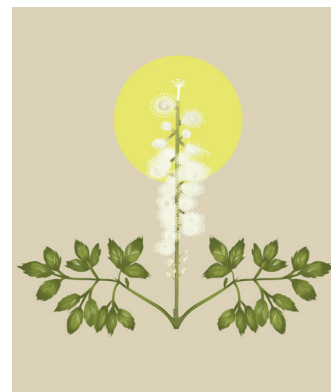
Elderberry has great potential in many areas as it is easy to propagate, relatively fast growing, and there are several ways to utilize fruiting. Several articles, case studies and guides are available (i.e., Brodt 2020) that show its potential.

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



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 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.



*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.*

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| <b>Yew Mountain Center</b><br>9494 Lobelia Road<br>Hillsboro, WV 24946<br>www.yewmountain.org<br>info.yewmountain@gmail.com                               | 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.   |
| <b>Appalachian Sustainable Development</b><br>280 Boone Trail Road<br>Duffield, VA 24244<br>(276) 623-1121<br>asdevelop.org                               | 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.  |
| <b>Rural Action</b><br>8 North Plains Rd<br>The Plains, Ohio 45780<br>(740) 677-4047<br>ruralaction.org<br>info@ruralaction.org                           | 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.  |
| <b>United Plant Savers</b><br>P.O. Box 147<br>Rutland, OH 45775<br>(740) 742-3455<br>unitedplantsavers.org<br>office@UnitedPlantSavers.org                | 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.  |
| <b>Future Generations University</b><br>400 Road Less Traveled<br>Franklin, WV 26807<br>(304) 358-2000<br>info@future.edu<br>future.edu/maple/            | 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.   |
| <b>Livelihoods Knowledge Exchange Network (LiKEN)</b><br>109 Rosemont Garden<br>Lexington, KY 40503-1930<br>(859) 523-5056<br>likenknowledge.org          | LiKEN takes a holistic approach to economic development - building on the region's outstanding biocultural infrastructure and historical and cultural assets.  |
| <b>Integration Acres</b><br>9794 Chase Road<br>Albany, Ohio 45710<br>(740) 698-2124<br>(740) 698-6060<br>integrationacres.com                             | 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.   |
| <b>Turnrow Appalachian Farm Collective</b><br>804 Industrial Park Rd Suite #2<br>Maxwelton, WV 24957<br>(681)507-5015<br>turnrow.localfoodmarketplace.com | 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.  |
| <b>Laurel Fork Sapsuckers</b><br>10677 Mountain Turnpike<br>Hightown, VA 24465<br>(540) 290-1676<br>laurelforksapsuckers.com                              | 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.  |
| <b>Other organizations that support planning for and the development of understory botanicals include:</b>  | <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> |

## SOURCES CITED AND PUBLICATIONS OF INTEREST

- 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.”
- Brodth, Sonja. 2020. Elderberry hedgerows provide farm income and environmental benefits. Inside Agroforestry Volume 28 Issue 1. Lincoln, Nebraska. National Agroforestry Center. pp. 4-6.
- Chamberlain, J., D. Beagle, and K. L. Connette. 2014. Forest Farming Ramps. Agroforestry Notes AF Note 47. Lincoln, Nebraska. National Agroforestry Center. 7 p.
- Davis, Jeanine M. 1999. Forest Production of Goldenseal. Agroforestry Notes AF Note 16. Lincoln, Nebraska. National Agroforestry Center. 4 p.
- Filyaw, Tanner R. 2019. The Forest Farmers Handbook - A Beginner's Guide to Growing and Marketing At-risk Forest Herbs. Rutland, Ohio. Rural Action and United Plant Savers with support of USDA NRCS. 122 p.
- Hammett, A. L. 1998. Improving markets for farm forestry products. Fact Net FACT Sheet 98-02 Morrilton, Arkansas. Winrock International. 2 p.
- Hufford, Mary. 1998. Curator, “Tending the Commons: Folklife and Landscape History in Southern West Virginia.” American Memory Web Exhibition. Washington, D.C.: Library of Congress.
- Kentucky Division of Forestry. 2020. Kentucky Forest Action Plan: A Comprehensive Strategy for Forest Resource Sustainability. Frankfort, Kentucky. 291 p. This publication is also found at: <https://eec.ky.gov/Natural-Resources/Forestry>
- LiKEN. 2023. Laurel Fork Sapsuckers Case Study. Published in the Agroforestry in Appalachia series of the Livelihoods Knowledge Exchange Network (LiKEN).
- LiKEN. 2023. Shady Grove Botanicals Case Study. Published in the Agroforestry in Appalachia series of the Livelihoods Knowledge Exchange Network (LiKEN).
- LiKEN. 2023. Socio-ecological Site Descriptions: A Guide to Appalachian Agroforestry. Published by the Livelihoods Knowledge Exchange Network (LiKEN).
- Kentucky State University, Cooperative Extension Program, Pawpaw Research Project, Community Research Service, Atwood Research Facility, Frankfort, KY 40601-2355 Information on Paw paw and its nutritional values are available through KSU, and from several other institutions such as Missouri Botanical Garden <https://www.missouribotanicalgarden.org/>
- Matthews, Elizabeth. 2023. Pawpaw: Small Tree, Big Impact. National Parks Service report found at <https://www.nps.gov/articles/pawpaw.htm> on March 3, 2023 (Several state conservation and extension departments have made factsheets and extension brochures focused on Paw Paw available)
- Rural Action and United Plant Savers. 2019. The Forest Farmers Handbook: A Beginners Guide to Growing and Marketing At-Risk Forest Herbs. Published by Rural Action. <https://unitedplantsavers.org/wp-content/uploads/2020/05/UpS-Rural-Action-Forest-Farmers-Handbook-for-web.pdf>
- Sustainable Herbs Program. 2022. American Botanical Council found at: <https://sustainableherbsprogram.org/forestbotanicalsweek/forest/>
- Trozzo, Katie E., John F. Munsell, James L. Chamberlain, Michael A. Gold, and Kim Niewolny. 2021. “Forest Farming: Who Wants In?” Journal of Forestry. 20 (20): 1-15.



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