

harvest, and sell NTFPs to companies that aim to increase their access to unadulterated, sustainable, and predictable raw material. On top of price premiums, forest farming is seen as an economic opportunity for forest-dependent communities, landowners, and wild harvesting stewards. There are many resources for individuals who are interested in learning more about forest farming and thinking about how it may fit into their land use and management:

1. Virginia Tech maintains an expansive YouTube library of videos about forest farming, products, harvesting, production and sustainable management. <https://www.youtube.com/user/exforestfarming/featured>

2. 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. <https://www.appalachianforestfarmers.org>

3. PlantShoe is an online mapping tool that allows people to study a section of woodlands for preferred forest farming habitat. One can easily and freely create a site report indicating source data relevant to forest grown species (aspect, elevation, slope, soil fertility, soil moisture, soil drainage, and forest canopy). Based on the source data, PlantShoe also provides a heat map indicating areas with preferable habitat for several iconic NTFP species. <https://plantshoe.org/Assessment/index/>

4. Virginia Tech and the Southern Regional Extension Forestry team have developed an online course consisting of video-based modules that introduce forest farming, products, management, harvesting, marketing, and economics. Not only is this an opportunity to learn more about forest farming, but one can also obtain Continuing Forestry Education (CFE) credits. Look out for announcements soon about the launch of the course. <https://campus.extension.org/enrol/index.php?id=1572>

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Goldenseal is a popular medicinal that can thrive in loamy forest soils under 68 – 75% shade. Photo by: Catherine Bukowski, Virginia Tech.

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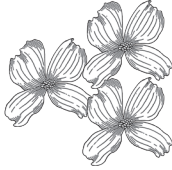
VIRGINIA FOREST LANDOWNER UPDATE

SPRING 2020



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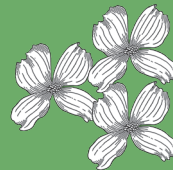
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Is Forest Farming for You?

By: Benjamin Addlestone and John Munsell, Virginia Tech

Forest farming is an agroforestry practice that involves cultivating herbal, edible, decorative, and handicraft products under a forest canopy that is modified or maintained to provide shade levels and habitat that favor growth and enhance production. These products are called non-timber forest products (NTFPs). They are the plants, parts of plants, fungi, and other biological material that are harvested from natural, manipulated, or disturbed forests and used for commercial or personal purposes.



Forest farming involves growing non-timber forest crops under the shade of a forest canopy. Photo by: John Munsell, Virginia Tech.

Most merchantable NTFPs are harvested in the wild, and sold into longstanding markets. Forest farmers intentionally cultivate and rotate these marketable NTFPs in the woodlands they own or have access to. They produce and sell raw material that is traceable, unadulterated, and sustainable. This can lead to market share and price premiums because companies can trace and confidently sell verified NTFP-dependent products to discriminating consumers.

Markets for NTFPs continue to grow. For instance, herbal supplement markets that purchase raw materials for their products currently exceed one billion dollars annually in the United States. The ramps (*Allium tricoccum*) market now exceeds 500,000 pounds traded annually, and plants retail for as high as \$28 per fresh pound. Log-grown mushrooms are popular and sell for upwards of \$15 per pound. Maple syrup is a staple product for many, but use of sap from other species (e.g., walnut, butternut, and birch) has expanded the sap/syrup sector, which is prompting growth in local production and differentiation akin to craft beverages.

Many farmable NTFPs are native to Appalachia. The region is iconic in the world of NTFP trade and home to habitat for many farmable woodland plants. It is full of ethnobotanical connections to herbal and edible woodland plants and fungi dating back generations. However, not just Appalachia, but Virginia broadly and surrounding states, are leaders in sourcing raw material, and industry efforts are underway to develop long-term contracts with forest farmers in Virginia and beyond.

Programs such as the Appalachian Beginning Forest Farmer Coalition (<https://www.appalachianforestfarmers.org/>), Appalachian Sustainable Development's Herb Hub in Duffield (<https://asdevelop.org/agroforestry/>), and United Plant Savers' verified Forest Grown program (<https://unitedplantsavers.org/forest-grown-verification-program/>) help forest farmers profitably manage,

EVENTS CALENDAR			For the most complete listing of natural resource education events, visit the on-line events calendar at https://forestupdate.frec.vt.edu		
Contact	Date	Location	Event	Time	Fee
DCR	April, May, & June	Virginia's State Parks	A variety of events and activities For a complete list, visit: www.dcr.virginia.gov/parks	Varies	Varies
MP	Year-round	State-wide	Virginia Master Naturalist Volunteer basic training www.virginiamasternaturalist.org/chapters.html	Varies	Varies
JG	April 9	Galax	Private Lands Prescribed Fire Workshop This one-day workshop will outline benefits of using fire as a management tool on your property, where to go, who to contact when you need assistance, and how burns are conducted safely and successfully to put you on the path of the best cost-benefit method of land management.	10 - 6	\$16*
JMM	April 18	Montpelier Station	Montpelier's Nature Exploration Series: Spring Ephemerals Montpelier's Horticulture team and the Virginia Master Naturalists will guide you through the Landmark Forest looking for spring's fleeting flowering plants. We will search the forest floor for orchids, bloodroot, toothwort, and Dutchman's breeches. April is the best month to see these native beauties.	10 - 12	\$10
JG	April 24	Wakefield	Longleaf Pine Landowner Field Day Join forest landowners and natural resource professionals from Virginia and North Carolina to learn about growing longleaf pine on your land.	8:30 - 3:30	\$15*
VFA	April 28 - May 1	Harrisonburg	Virginia Forestry Summit: Seeing the Forest through the Trees Join landowners and natural resource professionals for this annual educational meeting hosted by the Virginia Forestry Association, the Virginia Division of the Society of American Foresters, and the Virginia Chapter of the Association of Consulting Foresters.	Varies	Varies
JG	May 1	Harrisonburg	Timber Cruising Workshop for Landowners Learn to conduct a timber cruise on your land to determine volume and value. Hands-on experience.	8:30 - 3:45	\$20*
AD	May 9	Madison	Shiitake Growing Open-house Demonstration	8 - 12	Free
BS	May 11	Colonial Heights	11th Annual Vegetation Management Workshop Learn the latest about using herbicides to manage woodlands.	7:30 - 4	\$45*
JG	May 15-16	Galax	SW Virginia Beginning Woodland Owner Retreat For landowners new to woodland management, this program covers the basics of keeping your woods and wildlife healthy and productive, while working towards meeting your ownership goals. A combination of classroom, field trip, and hands-on activities are used to explore these concepts of sustainability.	Fri. 7:30 - 6:30; Sat. 7:30 - 12:30	Varies - Lodging available
BRPRISM	May 30 June 10 June 20	Boyce Afton Charlottesville	Seasonal Invasive Plant Workshops Non-native invasive plants are quickly overwhelming many properties by tearing down the forest canopy and overtaking our native plants at the tree, shrub and/or groundcover levels. These workshops will enable you to learn how to confidently identify and manage invasive plants.	1 - 5	\$25
WL	May 16-17	Marlington, WV	West Virginia Forest Farming Expo Attend workshops on propagating, growing, harvesting, and using plants like ginseng and ramps for food and medicine. Learn how forest farming can conserve and rejuvenate woodlands while generating agricultural income.	8 - 7:30 9 - 1	\$20*
MS	May 16	Berryville	New Christmas Tree Growers Meeting This hands-on workshop will cover getting started with Christmas tree production, including seedling selection, planting techniques, farm layout, and shearing. Safe use of pesticides and herbicides will also be covered.	8:45 - 1	\$10*
*meals included					

See Event Contacts on page 5

You Ain't From Around Here! Exotic Invasive of the Quarter: Japanese Knotweed (*Polygonum cuspidatum*) Part 1
By: Jennifer Gagnon, Virginia Tech

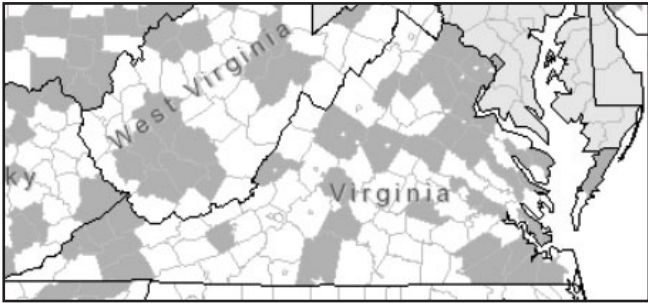
I've written about some pretty amazing (in a bad way) exotic invasives before – giant hogweed, wild hogs, and hydrilla come to mind. But Japanese knotweed stands alone. There's so much to share that this article will be broken into 2 parts. Part 1 will cover the history, pros and cons, reproduction, and a tale of madness and murder. Part 2 (in the Summer 2020 issue) will cover identification, control, and a tale of revenge.

Classified in the seemingly innocent buckwheat family, along with fan favorites such as sea grape and buckwheat, Japanese knotweed is a plant of many names. Scientific names include *Fallopia japonica*, *Reynoutria japonica*, and *Polygonum zuccarinii*. I'm using *Polygonum cuspidatum* as it's the one used by USDA PLANTS. Common names include: fleeceflower, Himalayan fleece vine, bil-lyweed, monkeyweed, monkey fungus, elephant ears, pea shooters, donkey rhubarb, American bamboo, Mexican bamboo, and in Japan it is known as *itadori* (tiger stick). There are two other kinds of knotweed found in the US. These are giant knotweed (*Polygonum sachalinense*), and Bohemian knotweed (*Polygonum x bohemicum*) a hybrid of giant and Japanese knotweed. Both are also exotic and invasive.

Japanese knotweed is an herbaceous bamboo-like perennial native to Japan, China, and Korea. The World Conservation Union listed it as one of the world's worst invasive species. It has been described as the Godzilla plant and the weed that just won't die. In the United Kingdom, Japanese knotweed is such a problem that it has entered common culture and resulted in at least one tragedy (more on that in a bit).

It was introduced to the New York Botanical Garden in the 1860's as a gift from James Hogg who ran a nursery in the city. He acquired the plant from his brother who was working in Japan. As you may have guessed, knotweed loved the big city and still does. Since 2010, New York City has spent over \$1 million treating just a 30-acre patch of the weed. And knotweed is now launching a rapid and devastating invasion in 38 other states.

Japanese knotweed has been identified in counties throughout Virginia. And it is more widespread that what the map shows. The map indicates that Japanese knotweed is absent in Montgomery County. But there are at least two known patches of it on my commute to work. I'll be reporting those as soon as they start coming back this spring.



Japanese knotweed is found in counties (shaded) throughout Virginia. Map from USDA PLANTS.

I'll get into why this species is so bad shortly. But Japanese knotweed is not without its charms. Although there is very little clinical data to support it, Japanese knotweed is a widely-used medicinal because it is rich in resveratrol, the family of molecules present in red wine and associated with health benefits. You can find a wide array of products containing it on Amazon. Japanese knotweed is thought to have anti-inflammatory, antimicrobial, and antioxidant powers, and supposedly can treat conditions such as hyperlipidemia and Lyme disease. Again, there is little data to back up these claims, but that doesn't stop it from being a huge money-maker.

Additionally, it is edible, although its tastiness is up for debate. One source described the flavor as lemony, while another described it as a very sour rhubarb. Personally, I don't find the description of "very sour rhubarb" very appealing; rhubarb is sour enough, thank you. But it can be used in recipes. In fact, I found several on-line, including:

- Japanese Knotweed Puree (<https://foragerchef.com/japanese-knotweed/>)
- Japanese Knotweed Bread (<http://www.ediblewildfood.com/japanese-knotweed-bread.aspx>)
- Japanese Knotweed Jelly (<https://the3foragers.blogspot.com/2011/05/japanese-knotweed-recipe-knotweed-jelly.html>)

I truly adore anything that comes with recipes. I have not tried these. I do not know if they are good. But if you make one, please let me know how it turns out!

Surprisingly, Japanese knotweed even has ecological benefits. Ground feeding songbirds eat the seeds, and with its August-September summer blooms, it provides a late season source of food for honeybees.

So, you may be thinking, this isn't such a terrible weed after all. Except...

Japanese knotweed is exceptional at reproduction. In Europe, all Japanese knotweed populations appear to be clones of a single female and do not produce pollen. However, they are able to accept pollen from the closely related giant knotweed, producing the fertile hybrid Bohemian knotweed. The hybrid appears to be spreading faster than either of its parent species.

Knotweed cont. on page 4

Knotweed cont. from page 3

In the US, populations have been documented with both male and female (European genotype) plants. Though the female plants do not produce pollen, they can produce viable seeds; males contribute pollen and may also produce seed. Reproduction by seed has been documented in the Northeast and also in Wisconsin. The potential for spread of the hybrid knotweed may be even greater; both male and female fertile hybrids have been found in areas without either giant or Japanese knotweed.

More commonly though, Japanese knotweed reproduces asexually. New plants can form from a fingernail-sized piece of stem or root. And roots in the ground will produce copious sprouts.

These reproduction strategies make Japanese knotweed a vicious invader, especially on disturbed sites such as roadsides, waste disposal areas, and construction sites, as well as along waterways such as rivers, streams, and ponds. It is highly adaptable to a wide variety of soil, water, and light conditions. Japanese knotweed is a rapid grower of up to 3" a day, so even though it dies back each winter, it quickly recaptures the site each spring. The plants grow deep taproots that extend up to 10' deep, and 23 to 56' laterally in the soil. One knotweed system that was almost certainly one plant, connected by an extensive root system, covered 32,000 square feet – about 2/3 of an acre!

Ecologically, a Japanese knotweed infestation can be disastrous. These plants form dense, dark colonies that exclude other herbaceous species. Additionally, the roots are allelopathic, meaning they exude an herbicide-like chemical that kills other species growing nearby. Fewer plant species mean fewer bugs, leading to fewer birds.

Because of the dense growth and allelopathy, new trees cannot grow under a knotweed monoculture. This has a particularly negative impact along streams, where trees and their root systems provide valuable erosion control as well as contribute to coarse woody debris, which is valuable habitat. Unfortunately, Japanese knotweed loves growing along streams.

Finally, there is little organic matter found on the ground under these knotweed infestations. This increases soil erosion, contributes to stream sedimentation, and reduces habitat.

Japanese knotweed is also responsible for economic damage. The vigorous root systems can penetrate asphalt and cracks in concrete, making them a menace to foundations, buildings, roads, retaining walls, and architectural sites. It is considered to be such a severe threat to structures that in the United Kingdom, people report not being able to sell their homes if knotweed is found on their property (they are legally required to disclose its presence); or they may not be able to get a loan to buy a home located on knotweed-infested property. There is some debate over whether or not this should be a major concern. But for at least one person, it was.

In a well-documented story from the summer of 2013, Kenneth McRae, a lab technician in the suburbs of Birmingham, England, murdered his wife before killing himself several days later. In his suicide note, McRae stated: "I believe I was not an evil man until the balance of my mind was disturbed by the fact that there is a patch of Japanese knotweed which has been growing over our boundary fence on the Rowley Regis Golf Course...It has proved impossible to stop, and has made our unmortgaged property unsaleable. ... The worry of it migrating onto our garden and subsequently undermining the structure over the next few years, with consequent legal battles which we won't win, has led to my growing madness." True story.

So, where I can send your seedlings? No? You've changed your mind? Good thing! In Part 2 you will learn how to identify and attempt to control Japanese knotweed, and to use it to exact revenge on your enemies.

Jennifer Gagnon is an Extension Associate in the Department of Forest Resources and Environmental Conservation, 540-231-6391, jgagnon@vt.edu.



Japanese knotweed forms dense infestations on disturbed sites and along waterways. The infestations along waterways can result in increased erosion and sedimentation. Photos by: Jenn Greiser, New York City Department of Environmental Protection.