

# green horizons

Growing tomorrow's future today.

Fall 2018

A newsletter from the Center for Agroforestry in  
conjunction with the Forest and Woodland Association of Missouri  
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Editors:  
Mike Gold, Hank Stelzer and Hannah Hemmelgarn

## Pawpaw Beer Comes of Age

Andrew L. Thomas, MU Division of Plant Sciences

Having eaten an occasional wild pawpaw as a kid, I had always been interested in the possibility of cultivating this very unique native fruit. Following the introduction of several terrific improved cultivars, the opportunity to establish a pawpaw research trial became imperative in 2003, when two significant orchards totaling 112 trees were established at the University of Missouri's Southwest Research Center at Mt. Vernon. The main study consisted of eight of the most promising cultivars planted in random, replicated plots. For years, the pawpaws thrived, produced tons (literally) of fruit, and lots of valuable data.

Like any crop, pawpaw production has its issues, but we quickly learned that they are relatively easy to grow and are very productive. The orchard eventually produced so many pawpaws (in fall, when I was perpetually short on help), that I had little choice but to dump the harvested fruit into huge compost piles. After all, I needed *data*, and even though I really like pawpaws, eating one fruit a day is all I can handle!

Eventually, local pawpaw enthusiasts began to object to me simply dumping the fruit. I had to underscore that I am a researcher working at a research farm, and the purpose of my work is not to produce and market fruit. Pawpaws are very perishable and difficult to handle when fully ripe, but interest and momentum in producing, processing, and consuming pawpaws was rapidly growing as more folks became aware of the pawpaw research underway. As those local pawpaw enthusiasts persisted, over the last few years, several people have helped me harvest the fruit and collect data in exchange for doing me the favor of hauling away the fruit for a greater purpose. Some of the fruit has ended up in high-end St. Louis restaurants, others have been pulped and made into pawpaw butter, jam, breads, and ice cream. Most recently, there has been interest in producing high quality pawpaw beer.

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## *Geosmithia morbida* Detected in MO

Robbie Doerhoff & Natalie Diesel, Missouri Department of Conservation

Thousand cankers disease (TCD) has been a concern for Missouri's native black walnut trees since 2008 when the issue was first discovered in Colorado. The disease is caused by the tiny walnut twig beetle, *Pityophthorus juglandis*, and a fungus (*Geosmithia morbida*) it carries to walnut trees. While the walnut twig beetle has not been found in Missouri, *G. morbida* has recently been detected in several locations throughout the state. These detections were part of a cooperative research project between the Missouri Departments of Agriculture (MDA) and Conservation (MDC) and the University of Missouri Plant Diagnostic Clinic with funding provided by the US Department of Agriculture's Farm Bill program.

Missouri's recent *G. morbida* detections were made through genetic analysis of several beetle species collected by MDA and MDC during walnut twig beetle trapping efforts in 2016 and 2017. Ongoing research in some eastern states has shown that *G. morbida* can be found on many walnut-feeding beetle species (both native and exotic). Through detections in our state and others, research suggests that *G. morbida* is a common and widespread native species.



*Cankers under the bark of a black walnut tree caused by *G. morbida*, introduced through walnut twig beetle feeding. Credit Ned Tisserat, CO State Univ., Bugwood.org.*

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## Prepare Now for Planting Trees Next Spring

*Jon Skinner, Missouri Department of Conservation*

It takes planning to plant an urban tree correctly; considerably more planning if you are planting several of them; and even more planning if you are hiring a contractor to do the planting for you. The following are steps you should consider in planting that tree and taking care of it once it is in the ground:

- ✓ Select and map every single planting site
- ✓ Identify any restrictions, like underground utilities
- ✓ Choose the right tree for the right place; consult an urban forester if unsure
- ✓ Choose a reputable landscape company; check references
- ✓ You and the landscape company sign a contract detailing job specifications
- ✓ Check with the nursery you, or your contractor, selected and confirm they will have the trees you want
- ✓ Inspect the trees at delivery before the truck leaves your site, rejecting any that are damaged
- ✓ Work with your planting contractor to ensure they follow contract specifications
- ✓ Inspect the actual planting, rejecting any tree not planted to specification
- ✓ Mulch the tree correctly
- ✓ Stake the tree, but only if needed;
- ✓ Plan for and water the tree(s) after the contractor leaves
- ✓ Keep weeds and grass away from the planted tree
- ✓ Keep the lawnmower and string trimmer away from the planted tree

**Contact your local urban forester if you would like assistance or reference materials.**

## Call for Citizen Scientists to Map Invasive Plants

*Lauren Pile & Dacoda Maddox, USDA Forest Service Northern Station*

Have you noticed the spread of urban non-native, invasive plants into rural and natural plant communities? How about seemingly innocent plants monopolizing your garden? Do you want to help scientists track non-native, invasive plants in Missouri? If so, this opportunity is for you!

The USDA Forest Service has developed a tool for citizen scientists and practitioners to report invasive plants in our state. Citizen scientists, like you, can now document the extent and severity of these invasive plants in the Show-Me State.

Invasive species are expanding from developed areas and threaten the ecological integrity and biodiversity of surrounding natural areas, including our national and state lands. This is why the USDA Forest Service, with our partners, developed a citizen science based app to help map invasive plant species in Missouri. Knowing the location and extent of these plants will allow land managers to make informed management decisions. The app is simple to use, fast, convenient, and free! We provide pictures and links in the app to aid in species identification. Whether you want to actively search for invasive plants or casually collect data while walking the dog in your neighborhood, your input will be invaluable.

Simply scan the QR code with a QR reader using your smartphone camera to open the survey. While you can run the survey online, we recommend you download the app for offline use.

In addition, the USDA Forest Service is partnering with University of Missouri Extension to offer workshops this fall in Columbia, Jefferson City, and Rolla. These 2-hour workshops will help you better



understand the ecology of invasive plants, how to identify invasive plants in Missouri, and will provide a tutorial on how to download and use the survey. You'll also leave with ideas for native plant alternatives in your home landscape. This is a great opportunity to hone your invasive plant ID skills and meet others in the community interested in Missouri forest-health issues. USDA Forest Service research foresters and research ecologists will be on hand to field any questions you may have about Missouri forest health concerns.

For more information about the citizen science invasive plant mapping app, contact Dacoda Maddox of the USDA Forest Service at [DacodaMaddox@fs.fed.us](mailto:DacodaMaddox@fs.fed.us).



# Forestland Legacy Planning

David Watson, D.A. Watson & Co. - a Blue Chip Consortium, LLC

I have been fortunate over the years to have had the opportunity to write and speak on the topic of “Timberland Succession Planning,” a topic near and dear to my heart. My interest in this subject stems from the fact that it lies at the junction of what I do professionally (financial advisor), and one of my passions (managing our family tree farm in Howard County). Literally hundreds of thousands of acres will change hands in the next several decades, as the current generation of timberland owners ages. Often the next generation is simply not in a position to take over the helm and manage a somewhat complex asset such as a farm or timberland. To address this gap, I have participated in quite a few workshops with my longtime partner, Hank Stelzer – MU Extension Forester, in which we detail the issues and complexities of preparing to successfully transfer family timberland to the next generation. These workshops have been wonderful learning experiences.

Forestland legacy planning circumstances are diverse: there may be no children assigned as heirs; they may live in different parts of the country, or they may have no interest in managing the land. What might a landowner do in this situation, when protecting and preserving their lifetime of work is a priority?

Timberland owners already have experience working with less-than-ideal situations. Whether addressing site selection or TSI thinning, we figure it out. We evaluate options, think through the outcomes, and make the decision that we believe to be best for the woods. Similarly, in legacy planning, if we are faced with a complex situation, we assess our options, examine the tools we have to use, and put in motion the best plan to achieve the best possible outcome for the woods.

Assuming there are no suitable heirs in the family, the following are several options to consider to preserve your work and legacy:

- Consider a **buy-sell agreement** with a neighbor, friend, or fellow tree-farmer who shares a similar passion for the woods, and will manage the property in a similar way. A “buy-sell agreement” is a binding contract that obligates the buyer and the seller to an agreed upon price or pricing formula), at a future date. It is triggered by death, disability or retirement, and is generally paired with a funding source (for the buyer), such as life insurance (on the present owner), or seller-financing. In effect, it guarantees the property will go to a specific buyer, under mutually agreed upon terms.

- Consider a **donation** to an organization who can manage and maintain the property in a manner that is compatible with your vision. Be sure that the organization has the resources to sustain the management objectives you desire. Potential candidates are:
  - Missouri Department of Conservation
  - Local Land Trusts
  - Colleges or Universities
- Consider a conservation easement on your property, and prepare to sell the property on the open market whenever you are ready. Conservation easements are customized agreements that permanently restrict the activities on the property, and guide the management of the timberland. Examples of such limitations could be restricting development and sub-division of the property, requiring that the timber be managed sustainably, requiring that cattle be fenced out of the woods and creeks, etc. Easements can be sold or donated, though most are donated. The easement is held by a 501(c) organization (typically a land trust) that agrees to enforce the terms of the agreement, in perpetuity, regardless of who owns the property. These are complex agreements that take time to negotiate. In the right situation, they can be very powerful tools in preserving the integrity of a well-managed property. Prominent Potential Easement Holders of Timberland in Missouri are:
  - The Ozark Regional Land Trust
  - The National Wild Turkey Federation
  - The Greenbelt Land Trust of Mid-Missouri
  - The Nature Conservancy

It would be great if we all had heirs who shared our love of the land, our work ethic, who lived in close proximity to the farm, and who had the time and financial resources necessary. However, like all things in the woods (more often than not in my experience), they lean the wrong the way, are on an uphill slope, and usually require work. But we choose to press on because the woods and the outcomes are absolutely worth it.



*continued from cover*

## Geosmithia morbida Detected in Missouri

Robbie Doerhoff & Natalie Diesel, Missouri Department of Conservation

What does this news mean for Missouri's walnuts? The good news is that on its own, *G. morbida* is not known to kill walnut trees. For TCD to develop on a walnut tree, walnut twig beetles must introduce *G. morbida* under the bark; the fungus is not known to cause cankers on trees without the help of walnut twig beetle (other beetle species are not thought to be good vectors). Since the walnut twig beetle has not been found in Missouri, we do not think that *G. morbida* poses a threat to our walnut trees at this time. There will be no regulatory actions or quarantines resulting from the discovery of *G. morbida* in Missouri.

Landowners are encouraged not to preemptively harvest walnut trees as a reaction to the discovery of *G. morbida* in our state. However, landowners should keep an eye out for the symptoms of TCD on walnut trees and report any declining pockets of walnut to their local MDC forester. To review photos of the signs and symptoms of TCD on walnut trees or to report possible TCD, please visit [www.treepests.missouri.edu](http://www.treepests.missouri.edu). If you have questions regarding TCD or the recent *G. morbida* detections in Missouri, please **contact MDC Forest Pathologist Natalie Diesel at (573)815-7901 ext. 2946**.

## Pawpaw Beer Comes of Age

Andrew L. Thomas, MU Division of Plant Science

In 2017, we had another huge crop of excellent fruit. Both Mother's Brewery (Springfield, MO), and Boulevard Brewery (Kansas City, MO) were interested in challenging their brewmasters to produce a pawpaw beer. The Giving Grove, a non-profit, inner-city "food forest" gardening group in Kansas City, also jumped in to help with the harvest and the connection to Boulevard Brewery. When interests and efforts aligned, we harvested about 500 pounds of ripe pawpaws for beer-making late last summer and shipped them to Kansas City.

I had not thought about all of this for a while, when suddenly in July, I got an email indicating that Boulevard's brand new Pawpaw Beer was to be debuted at a special invitation-only, paid event (a fund-raiser for The Giving Grove), and the beer was to be officially released to the public during a big "release party" event on Saturday, July 22. The very limited edition beer is called "Paw Paw's Got A Brand New Bag," named after a 1966 James Brown song. I also learned that the beer was to be priced at \$25 PER BOTTLE. I had to go! The release party was a blast. And the beer is delicious!

Boulevard describes the beer as "beginning life as a Belgian-style golden sour...then transferred onto fresh pawpaws...allowed to age six months...then an additional month fermenting out in a stainless steel tank. The resulting beer bursts with bright notes of mango, tropical custard, earthy brettanomyces and a pleasant citric acidity. With soft lactic acidity and a touch of bracing acetic character, this sour ale melds flavors of tropical fruit, banana and the namesake pawpaw with drying oak and an airy body with near effervescent carbonation."

I am very pleased with how all of this unfolded. The limited edition beer was very well-received during the private event of Kansas City beer connoisseurs, where folks also tasted pawpaw ice cream (locally made with pulp purchased from Ohio) and a pawpaw "curd" on a cheesecake type dessert. The event raised more than \$1,000 for The Giving Grove, a group that works to educate and establish neighborhood orchards and food forests. Boulevard produced less than 1,000 bottles of pawpaw beer. They want to keep this beer special and limited, so will not likely produce it every year. Ultimately, the goal of this effort is to facilitate the creation of significant markets for pawpaws produced by farmers, not the university. I am confident that this very exciting development over the last year is a huge step toward achieving this goal.



Pawpaw beer: a collaboration with MU, The Giving Grove, and Boulevard Brewery. Credit Amanda Lindahl



## Let's Go on a Bug Hunt!

*Sarah Phipps, Missouri Department of Agriculture*

The day is warming fast; the Missouri State Fair is in session and excitement is in the air. Various conservationists are mingling about, setting up their Show-Me State invasive pest booths. Thankfully, shaded by the large maple at the front and a large ash tree at the rear, we have some reprieve from the scorching sun. I scurry about, setting up scavenger hunt stations as a robust cicada killer wasp persistently searches for her burrow.

Families begin to filter from campsites into the dappled shade. I ask kids as they enter the picnic area, "Do you know what an invasive bug is?" Some of the older children give thorough answers, explaining that they're insects who aren't from here; they take over the environment and can kill trees.

The bug hunt is on! Kids grab scavenger hunt checklists and magnifying glasses and begin to search around the heavily mulched picnic table area for 10 different stations. They search for a long horned beetle on a log, grubs in the dirt, ants in plants like fire ants moving from southern states by hitchhiking in soil, d-shaped exit holes where the invasive emerald ash borer chewed its way out of firewood and s-shaped galleries where beetles hungrily feed to reach adulthood. Informative cards at each station create a booklet on how to be a plant hero, while learning to protect the native natural environment from invasive species in our yards, roadsides, and natural communities.

What do these stations all have in common? They help to sharpen kids' observation skills while teaching them how invasive insects travel to our state, and how they can help. If they see a tree dying in their yard, hopefully they will now take a closer look; and if they find an invasive species, hopefully they will report it to Missouri Department of Agriculture or Missouri Department of Conservation.

During the day, I felt a great sense of camaraderie with conservationists manning multiple invasive pest booths. Our shared mission to increase awareness about all types of invasive species from A-Z, including invasive ants, plants and zebra mussels, filled me with a sense of solidarity. Meanwhile, seeing an older brother trick his little sister by lifting up the gag cookie with the cockroach dangling below by monofilament brought a lighter side to this heavy topic; fun and learning about the natural environment all in one. After the



*A father helps his son find insects on the scavenger hunt. Credit Sarah Phipps, MDA.*



*"We be Grubbin" station, sifting through soil, a plastic Japanese beetle grub is found. Credit Sarah Phipps, MDA.*

scavenger hunt is completed, one mom points out a hole she finds on the maple tree, albeit from a native insect. It was great to see the learning being applied outside our classroom.

As I pack up at the end of the long day, I think about the trees. The trees that made the day tolerable from the unrelenting sun. The trees that already risk succumbing to invasive pests – the ash tree to the emerald ash borer and the maple tree to the Asian longhorned beetle. These trees need our protection.

When we explore nature, our minds are quieted and at peace. We see the forest but not the trees, the trees are just there standing guard, until they're not. Then they are missed for all the benefits they provide: shade, erosion control, habitat for animals, etc. Teaching kids when they are young to protect our natural environment is vital so they will grow up to become stewards of the land. Teaching kids to understand and love our natural environment is the only way we can sustain it. I hope you will join me in that mission.



# Missouri Black Walnut Initiative

Bob Ball, Missouri Chapter, Walnut Council

Imagine for a moment it's a miserable day outside, so you are rearranging your sock drawer. Suddenly, you find a large stash of cash you had forgotten you had hidden there years ago. Oh boy! Immediately, you begin dreaming about what you can buy, places you can visit, bills you can pay and on and on. Hopefully, some of this new-found wealth will be invested in stocks, bonds, or mutual funds planning for another rainy day.

The next morning is a beautiful day and you decide to walk through your woods, so you climb onto your utility vehicle and head out. A few minutes later you see a small parcel of land you used to crop years ago that raised excellent corn and soybeans. Today, instead of growing row crops the land is growing weeds, some brush, bush honeysuckle, autumn olive, and multiflora rose; all because you decided three years ago it was too difficult to maneuver your bigger equipment around the field. Are you going to begin thinking of ways to utilize that rediscovered wealth in land or will you close the sock drawer and drive on?

The "Missouri Walnut Initiative" is a promotion by the Missouri Walnut Council to encourage establishing and managing black walnut on idle acres of well-suited soils. Those walnut trees could become a significant source of income for your family and future generations. Well-managed walnut trees are like a savings account. Black walnut is one of the most valuable timber species in the United States, and the long-term outlook is good. The beautiful chocolate colored wood is easy to work with and has a natural satin finish.

Black Walnut (*Juglans nigra* L.), a valuable fine hardwood tree, may be growing voluntarily on your best soils in small, isolated areas that once produced excellent row crops. Walnut trees can be established in recently idled areas to produce a cash crop for future generations growing a "woody portfolio" for your heirs!

Missouri is well known for suitability to black walnut; with 20% of all walnut in the native range growing in this state. The current Forest Inventory estimates Missouri has 41 million black walnut trees with a diameter 5" or greater, which is more than twice the second rate state of Ohio.

The **growing site** is the most important factor in establishing and managing black walnut. Walnut grows best on lower slopes and stream valleys that have good soil moisture, deep (at least 60 in.) soil profiles, loamy soil textures, and a neutral pH. Our best sites are deep alluvial soils along creeks and deep loess soils mapped as "Well-Suited" using the soil mapping, soil data explorer, and vegetative productivity tools on the Natural Resource Conservation Service's web soil survey site.

Growing quality walnut trees depends on achieving these steps:

- Look for walnut saplings on recently idled land; plant nuts or seedlings in open areas.
- Exclude livestock from the site.
- Deaden trees like fast growing sycamore and soft maple so the young walnuts are taller than competing trees and brush for at least 15 years.
- Use herbicides to control grass and broadleaf vegetation 4' around the base of walnut seedlings for 3 or more years or taller than the competing vegetation.
- Use herbicides to control grapevines and invasive species.
- Prune during the dormant season to a central leader;

ideally, remove lateral branches 1.5" or less in diameter. Use crop tree management to periodically release the best trees. Manage the competition!

## What's your walnut worth?

The value of your timber depends on species, grade, location, market prices, and the harvest season.

Trees growing on well-suited soils could be harvest-ready in 50-70 years. On a constant dollar basis, they may be worth \$25,000-\$60,000

or more per acre assuming 30 crop trees per acre at harvest time. Do not lose sight of the fact this Initiative is about providing for our future generations. Growing walnut trees is much slower than finding hidden cash in your sock drawer, but is still a valuable opportunity, not to be missed!

Financial and technical assistance is available to eligible landowners wanting to establish and manage woodlands. To learn more about these resources and managing black walnut visit the Missouri Chapter, Walnut Council Initiative website at: [Initiative.MOWalnutCouncil.org](http://Initiative.MOWalnutCouncil.org); email: [mowalnutcouncil@gmail.com](mailto:mowalnutcouncil@gmail.com), or contact a professional forester serving your area.



Black walnut (*Juglans nigra*) volunteers may be managed for long-term value. Credit MO Chapter Black Walnut Council.



## Tree Response to Drought

*Jon Skinner, Missouri Department of Conservation*

We have received some rain in the last few weeks of August, but the damage to trees is already done. The drought is at severe to extreme categories in southwest Missouri, and extreme to exceptional in the northwest quarter of the Show-Me State. In these low moisture conditions, trees react in both the short and long term to this stress.

Short term responses can include:

- Wilting of leaves
- Scorching of leaf margins
- Dropping leaves early - brown, yellow, or green
- Early fall color
- Twig dieback, especially in the top of the tree
- Death of recently planted or already sick trees

Every species responds differently to drought. For example, red buckeye will drop leaves and be able to leaf out next spring. Hackberry and river birch regularly drop leaves during the summer months.

Besides dropping leaves, there are other physiological effects drought has on trees. But, they all add up to a weakened tree. The weakened tree is then setup for longer term effects, such as less growth the following year (or years), and greater susceptibility to attack from pests. These effects could last for several years and some trees succumb. We saw this during and after the 2012 drought with many older black oaks dying. They were attacked by various insect and fungi pests with Hypoxylon being the most visible. Keep these thoughts in mind as you care for your trees in the future. Long memories will help you understand your trees better.

Contact your local urban forester for more information on how to care for trees during drought.

## St. Louis Youths Join the Green Movement

*Tom Ebeling, Missouri ReLeaf*

This summer, six young adults age 16-18yrs from the City of St. Louis were hired for Forest ReLeaf's inaugural Tree Tenders program. The program was funded by a Partners for Places green infrastructure grant from The Funders Network and carried out in cooperation with the City of St. Louis Office of Sustainability, City of St. Louis Parks & Recreation and Forestry, Missouri Botanical Gardens, STL Youth Jobs and Missouri Department of Conservation. The Tree Tenders program is a member of The Green Teen Alliance, a coalition of organizations that promote careers in the green industry. This alliance works together to share recruitment strategies and has developed a standardized evaluation model to measure the program's success.

Tree Tenders spent June through August working on a variety of projects ranging from picking up trash and invasive species removal in city parks to helping reclaim a forgotten historic cemetery. They were exposed to many different aspects of the green industry and had the opportunity to discuss career paths with green industry professionals. Throughout the various projects, they were educated about invasive species ecology, plant and tree identification, hand tool and herbicide safety and environmental stewardship. They also had several opportunities for "park appreciation", which

involved exploring the many wonderful natural areas that can be accessed throughout the City of St. Louis. Mariah McGhee, currently a senior at the University of Missouri in Columbia, was the Forest ReLeaf summer intern that supervised the group as part of her capstone project.

Given the success of the inaugural program, Forest ReLeaf is seeking funding to continue hiring Tree Tenders well into the future. For more information about the program, contact Tom Ebeling at [tom@moreleaf.org](mailto:tom@moreleaf.org).



*Tree Tenders at the pollinator garden, Museum of Transportation. Left to right: Jamarr Williams, Emma Connell, Malakk Reed, Mariah McGhee (supervisor), Liana Kopp (FRM volunteer coordinator), Antonio Smith, Assante Pressley, Tessa Wasserman (Museum of Transportation, FRM volunteer).*



## Seats Still Available for the 2nd Annual White Oak, Wine and Whiskey Tour

Hank Stelzer, MU Extension, School of Natural Resources

Openings still exist to attend the second annual University of Missouri Extension *White Oak, Whiskey and Wine Tour* on Saturday, Oct. 13. The all-day tour toasts the state's unique contributions to the wine and whiskey industries.

The journey will begin in a white oak woodland where participants will learn what it takes for a white oak tree to be considered suitable for barrel manufacturing and how foresters are managing our forests today to ensure there will be barrels in the future. The tour by coach bus highlights two cooperages in the Randolph County town of Higbee,



population 568. Attendees will see how white oak logs are processed and made ready for the cooper. The Oak Cooperage, owned by Silver Oaks Cellars of Oakville, Calif., produces barrels for the company's Napa Valley winery. Barrel 53 Cooperage produces barrels for distilleries across the region. Lunch is provided at the oak cooperage.

The tour ends at the Les Bourgeois Vineyards and Winery near Rocheport. There, attendees will see the barreling of wine and learn how the white oak barrel imparts its unique traits to a wine's character. Distillers from Wood Hat Spirits of New Florence will describe how to create unique distilled spirits using Missouri products.

The tour begins at 8:30 a.m. Saturday, Oct. 13, at Hilton Garden Inn in Columbia next to Bass Pro Shop, and will return to the hotel around 4:30 p.m. Cost is \$75 per person or \$125 per couple and includes transportation, lunch and wine and spirits tasting for those of legal age. Registration deadline is September 30th. Cancellations will be accepted until the registration deadline with a \$25 nonrefundable fee.

A block of rooms has been reserved until September 21st at the Hilton Garden Inn. Hotel reservations are each participant's responsibility. Seating is limited to 40 people.

To reserve your spot, go to [extension2.missouri.edu/events/white-oak-whiskey-and-wine-tour](http://extension2.missouri.edu/events/white-oak-whiskey-and-wine-tour).

## MU Extension is "In the Woods"!

Hank Stelzer, MU Extension, School of Natural Resources

A year ago, having an Extension field specialist outstate was just a dream, but now it is a reality! This past August 20th, Sarah Havens became our first Natural Resources Field Specialist.

Havens grew up in St. Charles, MO. She is a product of the University of Missouri system, earning her B.S. in Forestry in 2004 here at MU and her M.S. in Biology at MUS&T in 2010. While stationed in Rolla, she will be helping State Specialists, Hank Stelzer and Bob Pierce, develop and deliver natural resource programming throughout the southern half of Missouri.

Havens will have three primary target audiences. First and foremost will be family forest landowners, especially underserved audiences like women owning woodlands and landowners new to the Show-Me State. Right behind that effort will be youth, with emphasis on 4-H. Our goal is to instill in today's youth a passion for the outdoors and a career in natural resource science and management. Closely associated with that audience will be assisting the forest products industry in workforce development.

Sarah Haven's email address is [havenss@missouri.edu](mailto:havenss@missouri.edu). Welcome to the team, Sarah!







## The Bid Box

*Hank Stelzer, MU Extension, School of Natural Resources*

Let's start this edition of The Bid Box right out of the chute with two recent timber sales from different regions of the state.

### Madison County (Eastern Ozarks)

- 120 acres
- 1,383 marked trees
- Est. volume: 323,000 bd. ft. (International Scale)
- 82% red oak; 14% white oak; 4% other mixed hardwoods
- The forester set the minimum bid at \$81,000
- Three bids were received
  - \$97,000
  - \$85,000.99
  - \$81,730
- The landowner followed the advice of the forester and took the high bid for an 18-month contract with a 10% non-refundable bid deposit
- Return: \$808/ac

### Morgan County (Lake of the Ozarks)

- 79 acres; mainly hardwood, but included a small, 50-yr-old pine plantation
- 869 marked hardwood trees
- Estimated volume: 125,200 bd. ft. (Doyle Scale)
- Primarily a mix of black oak, white oak, and northern red oak; trees marked were those to be harvested. Also included in sale was a pine plantation marked for thinning, meaning marked trees were those to be left, estimated 15,500 bd. ft. pine to be harvested (Doyle)
- Forester also marked several hundred small-diameter trees throughout the tract that could have come out of the woods to improve the stands, and were suitable for firewood, chipping, etc. Estimated 'volume' was 250 tons.
- Estimated value of the sale was \$30,000
- Five bids were received
  - \$37,310
  - \$26,500
  - \$26,450
  - \$13,250
  - \$20,125
- Landowners accepted high bid
- Return: \$472/ac

**Two** things of note regarding these sales. **First**, in the Eastern Ozarks, the trees were sold using the Doyle Scale and in Morgan County it was the International Scale. For folks new to selling timber you might ask, "Why two different methods?" and for you more 'seasoned' landowners, you already know the disparity between these two scales and say, "Everything should be sold on the International Scale because it is more fair to the seller." I'll save this discussion for a future GH issue. Suffice it to say, one must "Do as they do in Rome." Just another reason to have a professional forester administer your sale...they know which is the "correct" Rome in your neck of the woods! **Second**, you never know the range of bids you will receive for your timber, nor how precise (\$85,000.99) or how close (\$26,500 vs \$26,450) bids will be!

A final word needs to be said about future stumpage prices (what one gets for their standing trees). It is anyone's guess what tomorrow will bring with the threat of international tariffs looming on various raw materials, including hardwood logs. Will prices fall or hold their own? Industry professionals are as nervous as a long-tailed cat in a room full of rocking chairs! One really needs a professional forester on their team to stay abreast of market conditions.

To help you become familiar with some of the aspects of selling timber, check out the following MU Guides:

G5051 – Selling Timber: What the Landowner Needs to Know

G5057 – Basic Elements of a Timber Sale Contract

G5056 – Managing Your Timber Sale Tax



## Chestnut Roast Festival to Celebrate Center's 20th Year

Michael Gold & Hannah Hemmelgarn, University of Missouri Center for Agroforestry

Each fall, the University of Missouri Center for Agroforestry (UMCA) brings together local tree crop producers, researchers and educators, crafts people and conservationists to celebrate the harvest with roasted chestnuts, music, farm tours, educational speakers and product booths at the Horticulture and Agroforestry Research Center farm in New Franklin, MO. This year, on Saturday, October 6th, UMCA will also be celebrating its 20th year as an established “big C” Center at the University of Missouri.

Successes of the Center for Agroforestry, established in 1998, are due to the efforts of many individuals throughout our 20 year history. Along with the founding Director of the Center, Dr. H.E. “Gene” Garrett, recognition is due for former U.S. Senator Christopher “Kit” Bond (MO) and his former colleague Sen. Dale Bumpers (AR). In a bipartisan collaboration, Senators Bumpers and Bond were instrumental in providing financial support in the 1990’s to establish USDA ARS Dale Bumpers Small Farms Research Center in Booneville, AR and the MU Center for Agroforestry.

The core of Garrett’s vision for the Center, **To support the long-term future of rural and urban working farms and forests by achieving economic, environmental and social sustainability** can be summarized well in a quote from Aldo Leopold: *“A farm can be regarded as a food factory and the criterion for its success is saleable products. Or, it can be regarded as a place to live, and the criterion for its success is harmonious balance between plants, animals and people; between the domestic and the wild; and between utility and beauty.”*

A fourth key individual who believed in the core mission of the Center, Doug Allen established the H.E. Garrett Endowed Chair Professor of Agroforestry in 2009, and bequeathed his estate to the Center, helping to solidify our financial future. Dr. Shibu Jose was the second UMCA Director and the H.E. Garrett Endowed Chair Professor, from 2009 – 2017, and during his tenure, built upon the Center’s strengths. In 2017, as Dr. Shibu Jose took the School of Natural Resources Director position, Dr. Michael Gold, who served as the Associate Director from 2002 to 2017, became Interim Director.

Over these twenty years, the University of Missouri Center for Agroforestry has become one



Dr. Garrett, Dr. Gold, and Dr. Jose, with UMCA faculty and staff at a public education event in the chestnut repository at HARC.

of the premier centers of its kind in the world dedicated to agroforestry research, education, outreach and economic development, thanks to federal, state and private funding. The Center has been unusually blessed with long-term continuity in its endeavors. These long-term efforts are now bearing fruit on multiple fronts, and the impacts of its activities have profoundly and positively impacted landowners in Missouri, regionally, nationally and globally.

The Center’s strength lies in the success of its dedicated and productive core faculty and staff, active collaborative efforts including over 50 associated faculty, staff and external partners, and graduate students and postdoctoral research associates who define, design and carry out dozens of research, teaching, outreach and economic development projects. The Center also finds strength in the diversity of its stakeholders and friends who believe in agroforestry as a major form of global land use in the coming decades.

Please join us in our celebration of 20 years of sustained effort advancing agroforestry at this year’s Chestnut Roast Festival, Saturday, October 6th from 10am to 4pm. Included in this year’s Chestnut Roast Festival program: Horticulture and Agroforestry Research Center farm tours, tree crop cooking demonstrations by Ben Hamrah of Peachtree Catering, native tree and plant sales from Forrest Keeling and Missouri Native Plants Society among others, soil erosion rain simulations from NRCS, a corn maze and pumpkin picking patch for kids, historic Hickman House tours, and so much more! Questions? Visit the event page “Chestnut Roast Festival 2018” on Facebook or view the event flyer and other agroforestry news at [www.CenterForAgroforestry.org](http://www.CenterForAgroforestry.org)





# Species Spotlight: The Ozark Chinquapin

Michael Gold, University of Missouri Center for Agroforestry

The Ozark chinquapin (*Castanea ozarkensis*), sometimes called Ozark chestnut or chinkapin, is a drought tolerant hardwood tree that once grew up to 65' in height and up to 3' in diameter. The Ozark chinquapin is closely related to the American chestnut (*Castanea dentata*) and the Allegheny chinquapin (*Castanea pumila*) found further north and east.

Not as large in stature as the American chestnut, the Ozark chinquapin is the lesser known "cousin" to the towering *Castanea dentata*. Prior to the arrival of the chestnut fungal blight (*Cryphonectria parasitica*) the Ozark chinquapin inhabited the rocky upper slopes and ridge tops of the Ozark and Ouachita Mountains in Missouri, Arkansas, Oklahoma and Eastern Texas. Similar to the American chestnut, the Ozark chinquapin produces prolific nut crops that both humans and wildlife found delicious (note that the nut size of the Ozark chinquapin is much smaller than the American chestnut). Ozark chinquapin blooms in late May to early June after the threat of frost has passed. Fruits are spiny burs (to 1 1/4" diameter) that appear in small clusters, with each bur encasing one small rounded seed.

Similar to its larger American chestnut "cousin" the wood of the Ozark chinquapin was highly prized for its rot-resistance and made excellent lumber for barns, furniture, railroad ties and fence posts. Unregulated logging practices (which were the norm prior to WWII) and later the chestnut blight wiped out the most of the Ozark chinquapin (see map below). With rare exceptions, only blighted stumps remain of this once important Ozark tree.

Chestnut blight attacks the above ground parts of the tree. Fortunately, the fungus dies at the soil surface. The surviving roots can produce new stump growth of sprouts that will develop into small trees (to 15-20' tall) until reinfection inevitably reoccurs. Within 4-6 years, the blight again strikes killing the sprouts, and the cycle is repeated. The number of surviving stumps and the historic range of the tree continue to shrink.

The blight spread throughout the natural range of the American chestnut from ~1900-1940, and eventually reached the Ozarks in the 1960's. Within a decade, the Ozark hills were littered with the carcasses of Ozark chinquapin trees that reached up to 60 feet high. Today, the chinquapin survives mostly as root suckers that re-sprout after the above-ground portion of the tree is killed, and therefore very few seeds are produced to re-populate the species.

Ozark chinquapin restoration efforts are currently led by the Ozark Chinquapin Foundation (OCF) <https://ozarkchinquapinmembership.org/>. OCF efforts include:

- locating blight resistant trees
- distribute resistance seed for growing
- cross pollination
- DNA Analysis to confirm pure native strands
- nut grafting/twig grafting
- establishing research farms

This restoration work is a collaborative effort involving University researchers, student volunteers, local, State, and Federal cooperators, as well as outdoorsmen and women participating in field research and education. The Center for Agroforestry, in conjunction with the Missouri Dept. of Conservation, is becoming more involved in the overall restoration effort and will be an active partner in coming years.

Sources: Ozark Chinquapin Foundation, Missouri Botanical Garden



Ozark chinquapin single nut in bur

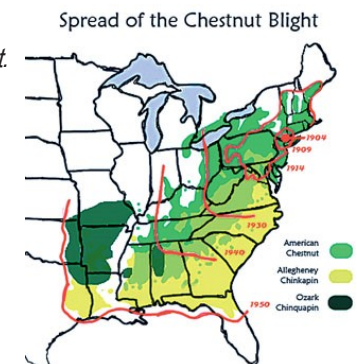


Size comparison of chinkapin, American, and Chinese chestnuts



Ozark chinquapin male catkin and female flower (at base of catkin)

Spread of the Chestnut Blight.  
Credit: Ozark Chinquapin Foundation



# Calendar of Events

## **Agroforestry in Action Webinar: Olive, Poultry, and Wild Asparagus**

*September 19, 2018 | 11:00am CST | Live at <https://agroforestryinaction.wixsite.com/agroforestryinaction>*  
Adolfo Rosati, of the Research Centre for Olive, Citrus and Fruit in Rome, Italy will give a public online presentation "Olive, Poultry, and Wild Asparagus: Integrated Agroforestry Systems for Mediterranean Climates". To register, visit <https://agroforestryinaction.wixsite.com/agroforestryinaction>

## **Native Medicinal Plant Conservation Forest Farming Tour**

*September 22, 2018 | 1:00 - 3:00pm | United Plant Savers Botanical Sanctuary in Rutland, Ohio*  
Participants will see wild populations of at-risk native herbs such as goldenseal, ginseng, and others. Learn about efforts to conserve at-risk plants and see demonstrations on how to grow them in your woodlands. Free and open to the public. More info at [www.oeffa.org/q/2018farmtours](http://www.oeffa.org/q/2018farmtours)

## **Pecan 101 Workshop**

*September 25, 2018 | 9:00am - 4:00pm | Noble Research Institute Kruse Auditorium in Ardmore, OK* Learn basic management skills to be a successful pecan orchard farmer. \$25 to attend, includes lunch. More information at <https://www.noble.org/events/pecan-101/>

## **Nutshell Discussion with Dan Shepherd on Marketing Pecans**

*September 25, 2018 | 6pm CST | Online event from the Savanna Institute*  
Harvest processing and marketing pecans at Pecan Valley: a talk about quality and packaging to get the most out of what you've raised. "Nutshells" are free online discussions. Register at <http://www.savannainstitute.org/events.html>

## **Agroforestry for Pollinators Field Day**

*September 25, 2018 | 10:00am - 2:00pm | Feral Farm in Jefferson, Wisconsin*  
Angelic Organics and the Savanna Institute will host this educational field day focusing on pollinator habitat on farms using USDA programs for financial assistance to plant, with production practices such as agroforestry. \$20 to attend, free to Upper Midwest CRAFT and Savanna Institute members. Register: <http://estore.learngrowconnect.org/home/Adult-Workshops/FIELD-DAY-Agroforestry-Pollinators.html>

## **11th Annual Private Lands Partners Day**

*October 2-4, 2018 | Partners for Conservation | BassPro White River Conference Center, Springfield, MO*  
This event brings together private landowner leaders and public partners to share experiences with cooperative efforts to conserve rural working landscapes for people and nature, highlighting collaborative and public-private partnership conservation efforts. More info: [www.partnersforconservation.org](http://www.partnersforconservation.org)

## **Wurdack Farm Producer Field Day**

*October 5, 2018 | 9:00am - 12:00pm | Wurdack Research Center farm Cook Station, MO*  
Learn about agroforestry and forestry activities at Wurdack Research Center farm during this morning event. For more information, contact Dusty Walter at [walterw@missouri.edu](mailto:walterw@missouri.edu)

## **Lancaster Kernza and Silvopasture Field Day**

*October 5, 2018 | 9:45am - 1:00pm | Lancaster Agricultural Research Station in Lancaster, Wisconsin*  
Field day highlighting innovative grazing practices: managed grazing with Kernza, a perennial grain and forage crop, with trees managed in pasture (silvopasture). Free and open to the public. More info: <https://www.cias.wisc.edu/lancaster-kernza-and-silvopasture-field-day/> or call (608)723-2580

## **Missouri Walnut Council Fall Event**

*October 5-6, 2018 | Mt. Vernon, Richey & Pierce City, Missouri*  
The Missouri Chapter of the Walnut Council's fall field days and business meeting is an opportunity to learn and discuss seeding and management options for black walnut and other fine hardwoods with landowners, foresters, and industry representatives. \$20 for members, \$30 for non-members both days, plus some meals. For more information and registration, contact [walnutcouncil@walnutcouncil.org](mailto:walnutcouncil@walnutcouncil.org)



## **2018 Chestnut Roast Festival**

October 6, 2018 | 10:00am - 4:00pm | Horticulture and Agroforestry Research Center in New Franklin, MO  
Celebrate the Center for Agroforestry's 20th anniversary with HARC farm tours, educational speakers and demonstrations, native plants, trees, food, and craft vendors, live music, and kids activities. More information and a complete schedule at [www.CenterForAgroforestry.org](http://www.CenterForAgroforestry.org)

## **Nutshell Discussion with Mark and Tammy Allen: Small Sawmill as a Second Income**

October 9, 2018 | 6pm CST | Online event from the Savanna Institute  
Tammy and Mark Allen will share about their 20 years of experience operating a small sawmill as a second income. This online discussion is free and open to the public. Register at [www.savannainstitute.org/events.html](http://www.savannainstitute.org/events.html)

## **38th Central States Forest Soils Workshop**

October 9-11, 2018 | Indiana Association of Professional Soil Classifiers | Van Buren, MO  
Forestry and soils professionals will discuss the interaction of their fields and how to improve both, plus networking for forest products, management, and economics. More information at <https://www.eventbrite.com/e/38th-central-states-forest-soils-workshop-tickets-47031523553> or contact Dena Anderson at [dena.anderson@in.usda.gov](mailto:dena.anderson@in.usda.gov)

## **Managing Shade for Profitable Beef Production**

October 10, 2018 | 2:00pm - 5:30pm | Tomazi-Mingo farm in Saint James, Missouri  
Tour operation utilizing natural shade in rotationally grazed paddocks, learn about managing forages, timber, and livestock in an integrated system, plus livestock genetics and portable breeding barn demonstration. \$10 includes hot dinner. More information: <http://www.centerforagroforestry.org/events/MingoFarm.pdf> or call (573)882-9866

## **Forest Farming in Missouri**

October 12, 2018 | 9:00am - 4:00pm | HARC farm in New Franklin, Missouri  
This workshop, which will cover basic forest farming principles for growing mushrooms, medicinals, edible and decorative floral products, is available free of charge for natural resource and agricultural service providers and educators. For more information, contact Gregory Ormsby-Mori at [ormsbyg@missouri.edu](mailto:ormsbyg@missouri.edu) or call (573)882-9866

## **Woodland Management in Missouri**

October 19, 2018 | 9:00am - 4:00pm | Wurdack Research Center, Cook Station, Missouri  
This workshop is available free of charge to natural resource and agricultural service providers and educators. For participating extension personnel, travel costs are covered. More information and to register, contact Gregory Ormsby-Mori at [ormsbyg@missouri.edu](mailto:ormsbyg@missouri.edu) or call (573)882-9866

## **2018 Annual Missouri Forage & Grassland Council Conference**

October 29-30, 2018 | Capitol Plaza Hotel & Conference Center, Jefferson City, Missouri  
This year's MFGC conference features speakers addressing profitable, multispecies grazing, genetics, and networking. Complete agenda and registration available at <https://mofgc.org/conference/>

## **Benefits of Agroforestry in Transitioning and Organic Systems**

December 4, 2018 | 2:00pm CST | Live webinar at [conservationwebinars.net](http://conservationwebinars.net)  
This webinar presented by USDA Natural Resources Conservation Service, will feature Bart Lawrence, USDA Forester, and Richard Straight, USDA National Agroforestry Center Technology Transfer Leader, who will share how trees and shrubs can provide benefits for organic systems

## **6th Annual Perennial Farm Gathering**

December 7-8, 2018 | Savanna Institute | Lussier Family Heritage Center, Madison, Wisconsin  
If you're interested in perennial crops and pastured livestock, come learn what farmers, scientists, and others are discovering - what's working and what needs more work. More information and registration at <http://www.savannainstitute.org/perennial-farm-gathering.html>

Hannah Hemmelgarn, Center for Agroforestry

Joe Alley, Resource Conservationist  
NRCS, MO SAF

Scott Brundage, Consulting Forester

Eugene L. Brunk, MDC Retiree

Donna Coble, Executive Director  
Forest ReLeaf of Missouri

Lynn Barnickol, Executive Director,  
Missouri Consulting Foresters Association

Rebecca Landewe, Current River Project  
Manager  
The Nature Conservancy – Missouri

Mike Gold, Director, Center for Agroforestry

Hank Stelzer, MU Forestry Extension

Bob Ball, President,  
Missouri Walnut Council

Steven Westin,  
MDC Private Lands Forestry Programs

Clell Solomon,  
Mo. Christmas Tree Producers Association

Kurt Boeckmann,  
Mo. Department of Natural Resources

Kim Young, Vice President/General Manager  
Forrest Keeling Nursery

Matt Jones, Vice Chair,  
Missouri Tree Farm Committee

Sarah Phipps,  
Missouri Dept of Agriculture

Ann Koenig, Urban Forester,  
Missouri Department of Conservation

## CONTRIBUTORS



Walnut Council,  
Missouri Chapter



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES



School of Natural Resources

College of Agriculture, Food and Natural Resources

## CONTACT GREEN HORIZONS

Send story ideas, address  
changes and subscription requests  
for Green Horizons to:

Mike Gold, Hank Stelzer, co-editors  
Green Horizons  
University of Missouri  
203 ABNR

Columbia, MO 65211

goldm@missouri.edu | (573) 884-1448

stelzerh@missouri.edu | (573) 882-4444

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