

A newsletter from the Center for Agroforestry in conjunction with the Forest and Woodland Association of Missouri http://www.centerforagroforestry.org/pubs/newsletters.php

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The Francis Quadrangle Legacy Oaks Project

Pete Millier, Director of MU Landscape Services

Planted in the mid-1950s, the pin oaks (Quercus palustris) surrounding the Francis Quadrangle are in the last stages of their natural lives. Normally, this species has a life expectancy of 70 to 90 years. However, the addition of a lawn irrigation system in the 1990's to sustain the turf grass shaved off several of those years to the point some of them becoming were hazardous to pedestrians and buildings. While over the past few years there had been ongoing discussion on eventually replacing these legacy oaks (as they had become to be called), in July of 2018, the health of five of the most severely distressed trees passed the tipping point and the trees were removed. That transformed conversation into action.

The University's Landscape Services and the Mizzou Botanic Garden convened a group to advise the campus on the best way to replace these legacy oaks. This included selecting a suitable species that would honor the heart of the university longer than the relatively short-lived pin oaks.

Working with Wayne Lovelace, an MU Alumnus and owner of Forrest Keeling Nursery in Elsberry, Missouri, five species are currently under evaluation at the MU South Farm Research and Extension Center on the southeast edge of town. These are the swamp white oak (*Quercus bicolor*), overcup oak (*Q. lyrata*), bur oak (*Q. macrocarpa*), Quercus x schuettei oak (*Q. macrocarpa x Q. bicolor*), and Quercus x

'Jillian' (*Q. bicolor x Q. macrocarpa x Q. lyrata*). One of the guiding principles of the tree selection process is to plant trees that will last 100-200 years. All five species have been tested for their adaptability to Missouri climate and soils.

One dozen of each of these species are being grown in 30-gallon knit bags placed in the ground. The knit bag system encourages a fibrous root system that will allow the trees to be easily transplanted with minimal transplant shock. They will be well cared for receiving optimal amounts of water and fertilizer. Of the 60 trees being evaluated at South Farm, 20 will be selected in two to three years for transplanting to the Quad. The remaining trees will serve as replacements for other overmature pin oaks across campus.

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Distressed pin oak on Quad that was removed in the summer of 2018

A unique challenge to this project is the infrastructure of the Quad itself. It is bordered on three sides with 100 year old utility tunnels. These tunnels are the arteries, lungs, and central nervous system of the Columbia campus providing steam, chilled water, and electricity. They make the Quad akin to a bath tub by restricting the irrigation water to freely exit the soil profile. The sidewalks above serve as a protective cap. Due to the fragile nature of this infrastructure, aging special equipment will be needed for both tree removal and transplanting operations.

This Legacy Oak Project will ensure that future generations of Tigers will enjoy the same scenic beauty of the Francis Quadrangle that has inspired Tigers of generations past.



Fall is the Perfect Time to Plant a Yard Tree

Hank Stelzer, MU School of Natural Resources Extension

The fall season is an excellent time to plant new trees in your yard. Fall planting allows for root development to occur prior to winter's arrival. These fall roots help the tree become established before the hot, dry conditions of next year's summer arrive.

The ideal time to plant in the fall is between mid-September and the end of October. Planting later into November decreases the amount of root growth before the soil cools.

A good rule of thumb is that if the trees in your area still have leaves, you can plant new trees. Better yet, look to the soil! Using a soil thermometer, measure soil temperature early in the morning for a few, consecutive days. If your soil is consistently 50° F or higher, you are good to plant.

Planting in fall varies little from spring procedures. Most important is to select the right plant for the right location. This will require research before heading to the nursery to pick out the plant. Know the height, spread and shape of the tree that is needed in the landscape. Always plan for the mature size of the plant. This prevents plants from overtaking the allotted space and reduces maintenance such as pruning. Avoid fall planting of trees in locations that are prone to excessive cold winter winds or cannot be watered.

The planting hole for your tree is important. It is often said, dig a hundred dollar hole for a twenty-five dollar plant. This is truer now than ever backed by current research. It is better to dig the hole wider than deeper. Digging deeper than the root ball depth causes the plant to settle. This settling results in an unhappy root system that is often prone to decline in our heavy clay soils.

The width of the planting hole should be two to five times the diameter of the root ball (*diagram*, *right*). This loose soil around the root ball allows for quick root growth into the soil from the root ball. When backfilling, do not stomp the soil, as this causes compaction and slows root growth. Either lightly firm the soil or allow water to naturally settle the soil.

Once the tree is planted, keep it properly watered. Dry soil conditions during winter are one of the main drawbacks to fall planting. We often forget to water during the cold of winter. The soil will absorb water unless frozen. When watering, deeply soak the soil and allow it to dry before reapplying. Check the moisture level and water as needed throughout the entire winter.

Normally, young trees are not fertilized at the time of planting. Wait one growing season before applying the nutrients. The only exception would be a root starter type fertilizer. Establishing roots is more important in the early stages of growth than top growth.

A word (or two) needs to be said about planting smaller, bare-root forest tree seedlings. These plants start their life out as a seed in the spring and need to be conditioned before being planted in the forest or an old field. This conditioning requires these seedlings to remain in their nursery beds through the fall and early winter months before they are ready to face the world. We will talk more about planting forest tree seedlings in the winter issue of Green Horizons.

An excellent reference is MU Guide G6850, How to Plant a Tree. Take advantage of the fall season and add new trees to the landscape, it is a great time. But remember, care is just as important for success as in the spring.



For more information about tree planting, visit the University of Missouri's Extension guide at <u>https://extension2.missouri.edu/g6850</u>



Participatory chestnut breeding – establishing a participant network and characterizing superior on-farm germplasm

Ronald Revord, Assistant Research Professor, The Center for Agroforestry, University of Missouri

Interest in U.S. chestnut cultivation for nut production continues to increase as a grower-led initiative. Across the Midwest U.S., grassroots development of chestnut over the past decade has led to the successful establishment of multiple farmer cooperatives (e.g., Route 9 Cooperative, Prairie Grove Chestnut Growers) and in turn many new local and regional markets. Leaders within these regional industries indicate demand perennially exceeds supply and that chestnut cultivation needs to expand accordingly. In fact, the number of chestnut farms in the U.S. grew by 57% from 2012 to 2017, including over 400 new chestnut farmers in midwestern and neighboring states.

Many chestnut orchards, both old and new, are seedling-based and composed of half-sibling families from open-pollinated traditional Chinese chestnut varieties. While suitable for first-generation production, as a whole, these plant materials represent the base for genetic improvement. These trees intentionally serve the dual purpose of pre-breeding – to identify superior individuals (or crosses) that have recombined desirable traits and improved adaptability. There are nearly 7,000 chestnut seedlings of bearing-age on farms in the Midwest, which represent 20 half-sibling families. This germplasm offers an extraordinary opportunity to assemble a wide genetic base of improved plant materials required for establishing a dedicated chestnut breeding program. Building genetic improvement efforts from this pre-existing on-farm material is of the upmost importance as it builds on several decades of farmer investments and evaluations.

The Center of Agroforestry at the University of Missouri seeks to formalize a participatory network of chestnut growers with the goals of characterizing on-farm germplasm and assembling core sets of breeding parents that enable systematic breeding. Accordingly, the proposal has three objectives:

- i. develop and curate a database of existing on-farm chestnut germplasm in the Midwest US and neighboring states;
- ii. characterize the phenotypic diversity and phenology of top selections amongst the database trees, as guided by pre-existing grower evaluations;
- iii. use genetic fingerprinting to characterize the genetic diversity and parentage of the evaluated selections.

Packaged together, this body of work will yield data that supports the selection of superior individuals for conservation and introduction into breeding schemes. Additionally, this effort will offer an opportunity to identify individuals that produce progeny more "true to type", i.e., parents or combinations thereof with greater heritability for traits of interest.

Further, this may serve as a foundational study for a larger scope of breeding and genetics research on chestnut for nut production in the U.S. The outputs of this study (i.e., selected core sets) will be used to establish the **Participatory Chestnut Breeding Network**. The Network will be comprised of an institutional breeding program housed at the University of Missouri that works in concert with the participatory grower network to decentralize progeny selection on-farms throughout the targeted cultivation regions. This developmental framework offers a means to build off of the former grassroots efforts to help standardize means for high quality chestnut kernel production and ensure continued access/growth of respective high value markets. In brief, the research aims to serve the framework established by today's pioneer chestnut growers.



View of a chestnut orchard that is part of the Center for Agroforestry's research trials at the Horticultural and Agroforestry Research Center. New Franklin, MO Photo Credit: Raelin Kronenberg

If you would like to stay informed about the Participatory Chestnut Breeding Network, contact Ron Revord at <u>revord.r@missouri.edu</u>



MISSOURI HARDWOOD EXPORT TRADE

Lynn Barnickol, Missouri Consulting Foresters Association

Missouri hardwoods are an internationally traded, industrial raw material, manufactured from forests that are hopefully renewable. When global and domestic economies are strong everyone in the supply chain benefits.

Domestically, the upper grades of hardwood lumber that's used in finished products are in demand depending on consumer's level of interest and strength of the US economy. Industrial hardwood products like railroad ties, crane mats, other timbers, and blocking not used in finished products are, at some level, usually in need. Pallet lumber and pallets are used domestically, but pallets are also exported, facilitating the shipping and handling process of various manufactured products. Sawmillers need markets for the heart center of good logs as its where the knots and other defects are located. If any clear wood is to be recovered from a plump log it's in the outer jacket of wood surrounding the heart center. That is where the opportunity for upper grades of hardwood lumber is found. Since the upper grades of lumber can be exported, as well as used domestically, it makes sense to have various domestic and international markets. Internationally, China has been a trading partner for many US goods including logs and the upper grades of red oak and walnut lumber. Trade with China peaked in 2017 when US wood exports topped \$9.5 billion. China was at \$3.2 billion or 33%; Canada at \$2 billion or 20%; and the United Kingdom, Japan and Mexico at about 7% each; all totaling about 74% of the US wood export market. The remaining market share of 26% is split among all other countries*. The take home is that China receives about one-third of the of the US wood products exported. Zooming in to Missouri, a total of over \$212 million in wood products were exported in 2017. Of that, China accounts for 40% of the value; Canada 11%; Spain, France, and Mexico account for about 5% each for a total of about 66% market share. The remaining 35% of the \$212 million export value represents other countries. The top five products are walnut lumber and logs, white oak barrels, red and white oak lumber, and shortleaf pine lumber and eastern redcedar logs.*



Missouri timber, Photo credit: Julie Harker, Brownfield Ag News

While China was a major player importing significant amounts of hardwoods representing 45% of world marketshare for lumber and 57% of log exports; there are several other countries that import grade hardwood lumber and logs.** Restricted trade with China has not helped those in the hardwood lumber and log supply chain. Some bright spots: The Missouri Department of Agriculture Domestic and International Marketing Program, plus various lumber and log exporters, are attending trade shows in Vietnam, Taiwan, Dubai, and Brazil promoting Missouri hardwoods. Individual lumber and log producers have structured their business around the domestic market while others are seeking to widen their export opportunities. Finding new trading partners has drawbacks. Vietnam seeks hardwoods but its infrastructure is lacking, and the economies of some countries peak and wane causing an un-steady market. Problems with China have not helped and Missouri weather has slowed wood production. Best advice is to work with your forester, take advantage of professionally trained loggers, and

be in contact with your tax accountant about revenue from timber harvesting. Take a look at the Bid Box: Quality hardwoods in commercial quantities always make a statement.

*Missouri Department of Ag and USDA 2017 GATS ** July 2019 American Hardwood Export Council Southeast Asia and Greater China



Missouri Chapter, Walnut Council Forestry Field Day

Saturday, October 19, 2019 Mockingbird Hill Tree Farm 3215 Zion Road, Jefferson City, MO 65109

The Missouri Chapter of Walnut Council announces our fall field day and business meeting *Saturday, October 19th, at the Norm and Beth Stucky "Mockingbird Hill Tree Farm"* Southwest of Jefferson City, Missouri. The Stucky's welcome Walnut Council to their tree farm and barn which also serves as a wedding venue. This event is an opportunity to learn and discuss several technical topics with landowners, foresters and industry representatives. Rather than travel to multiple tree farms, this fall we will focus on walking tours to learning stations spotted around the Stucky Tree Farm. Lunch will be an old-fashioned wiener roast at the barn consisting of hot dogs, baked beans, chips, coleslaw and Beth's killer brownies!

The registration fee for Walnut Council members is \$10 per person. The non-member fee is \$15. *Join Walnut Council at this event and save \$5.00!* The registration fee includes soft drinks and water, an old fashion wiener roast lunch with all the fixins, doughnuts, coffee and juice in the morning plus numerous technical handouts.

<u>Notes:</u> Non-members and guests are welcome and encouraged to attend. Organizations or groups wanting to exhibit are welcome at no cost, but tables, electricity nor chairs will be provided. Please bring a lawn chair just in case. This event qualifies for 5.25 hours of Category 1 SAF-CEU credits. Be sure to sign-in during the day!

RSVP by Wednesday, October 16th. Either **e-mail Fred Crouse,** Treasurer, at: (fcrouse@centurytel.net or call (573) 449-1950) to attend. Your registration can be paid by personal check payable to *"Walnut Council"* or by cash beginning at 8:30 a.m. that Saturday in the barn. Advance payments by regular mail will be greatly appreciated! Receipts will be provided at the event. Note: *Walnut Council* is a 501 C (3) nonprofit organization.



MASBDA Helps Bring a Dream to Reality

Maddie Berwanger, Ioan officer for the Missouri Agricultural & Small Business Development Authority

Behind the eyes of every farmer, producer and agribusiness owner is a dream to do more with what they have and add value to their business. The agriculture industry is always growing and changing to meet new demands, new markets and new supply chains. The Missouri Agricultural and Small Business Development Authority (MASBDA) offers programs to grow those dreams.

Joe Wilson and Wayne Harth, owners of Missouri Northern Pecan Growers in Nevada, Missouri, started with a dream to do more with what their farm had to offer at face value. They wanted to take their raw products, add value and turn them into profit. The dream stemmed from picking the family trees each year and later grew to custom picking. However, this was not enough for these pecan farmers. They wanted more. In 1999, a group of pecan farmers came together and created the Missouri Northern Pecan Growers, LLC, which then utilized the MASBDA Missouri Value-Added Grant Program to fund a feasibility study. This was the springboard they used to find their future success.

MASBDA's Value-Added Grant Program offers an inexpensive way to test an idea, or create a business or marketing plan. The materials and information gathered during the studies are tools for farmers, producers and businesses to use to make educated decisions on whether to invest or hold off on business ventures. In 2001, Missouri Northern Pecan Growers received funding from the Value-Added Grant Program to complete a business and marketing plan. This led to the completion of a processing and cleaning plant where they cleaned and sold pecans themselves. The group also received funding in 2002 for an additional marketing grant to look at new markets and how to best market their products. In 2003, they received funds from MASBDA for a feasibility study, as well as a marketing and business plan, to see if the business would do well under an organic method of farming. The idea was proven feasible and they started selling processed organic pecans. The Missouri Northern Pecan Growers have looked at many different business structures and have done the research to set themselves up for success.

"Balance your capital with your marketing and production," Wilson said. "All three need to grow together. If you over market and don't have the production or don't have the capital to meet the sales, then you will upset your suppliers. If any of those three get out of balance, it is going to create problems for you." The Missouri Northern Pecan Growers returned to MASBDA and applied for the Value-Added Farm-To-Table Grant Program in 2019. The program is used by producers and farmers who are selling or plan to sell products to schools and institutions in Missouri. They were approved in January and those funds will be used to build a commercial freezer as part of a community kitchen. Upon completion of the freezer, the Missouri Northern Pecan Growers will market and sell pecans to schools and institutions.

For more information on the Missouri Value-Added Grant Program, Value-Added Farm-To-Table Grant or other financial assistance programs MASBDA offers, visit Agriculture.Mo.Gov or call (573) 751-2129.



MASBDA - Missouri Northern Pecan Growers



The Weight of the Scale - Japanese Maple Scale Attacking Missouri's Trees

Sarah Phipps, Missouri Department of Agriculture

Shipments of oyster-shell shaped insects are being brought to Missouri on nursery trees. Unfortunately, instead of a pearl, an exotic, plant-thirsty, armored called scale the Japanese Maple Scale (Lopholeucaspis japonica) resides underneath the protective waxy covering. They can be hard to spot since outwardly they don't look like an insect at all. Lacking the typical traits of six legs, wings and wiggly antennae, they are a motionless, legless bead that attaches onto the trunk and branches. Looking at a single scale - it doesn't appear that they possess the capacity to create a nuisance, but they are continuously feeding on the plant's nutrients that flows just beneath the bark with their piercing sucking mouthparts. Strength in numbers make this minute insect a formidable pest that will instigate twig and branch dieback, thinning canopy, and a gradual decline in the health of trees and shrubs.

Unlike its name, Japanese Maple Scale (JMS) feeds on more than just the Japanese maple. In fact, they are not picky eaters as the scale's known host range includes trees and shrubs in more than 45 genera in 27 families. It infests many of the most common nursery and landscape plants in Missouri including maple, lilac, dogwood, redbud, red pear, crabapple, cherry, magnolia, hornbeam, honey locust, stone fruits, birch and broadleaf evergreens like holly and firethorn. It initially arrived on the east coast, but is rapidly expanding its range with the help of infested nursery stock. JMS was first observed in Missouri in 2013 on some hornbeams that were direct shipped to St. Louis from a nursery in Tennessee. However, it is being found more commonly in nurseries all over the state as many more shipments of infested plants are being received. Missouri Department of Agriculture inspectors look for and stop sale infested plants, but you should be on the lookout for this pest as well.

Japanese Maple Scales' wide host range is not the only challenge of this emerging pest. Since armored scales are typically small and blend well with the plant bark, they are frequently overlooked. Because of this, scouting for the pest is an essential step to spot the scale when the population is low.



Photo of Japanese Maple Scale Eggs (note the purple color) Image from the University of Delaware Cooperative Extension

Inspection tips include scanning the bark closely, especially at branch collars and along the trunk. Light infestations often start in the cracks and rough areas of the bark and branches. Look on bark for the small white, elongated, narrow scale covers measuring only 1-2 mm long. They can blend in with the whitish lenticels and can be easily glossed over without close inspection. In a light infestation, it can be easy to miss at first as it can just be in one small portion of the tree. A hand lens would be helpful in this endeavor. To test if it's Japanese Maple Scale, use your thumbnail to lightly scratch off the outer wax covering which will expose the purplish, softbodied insect or eggs underneath. Heavy populations can cover tree trunks and branches and appear as a coating of white flecks.

MDA nursery inspector, Susan Ehlenbeck, notes that there are a few scale insects that can be confused with JMS including the White Peach Scale (can get on ash and a few other deciduous trees), White Pine Scale (looks similar, but usually on different hosts and JMS is smaller), Euonymus scale, and the grey race of Oystershell Scale (larger and easier to see than JMS).

Continued on page 8.....



Their complex lifecycle makes it difficult to predict the perfect timing for pesticide application. Eggs are laid underneath the scale covering of the adult female. When the eggs hatch, tiny immatures, known as nymphs, emerge. During the "crawler" phase, nymphs have functional legs that they use to "crawl" to new areas on the plant or to another plant until they find a suitable location to settle in and start feeding. The "crawler" phase is the most vulnerable stage of their lifecycle, therefore it is the stage often targeted for control with contact pesticides. However, once the crawlers have settled down to feed, they create their protective covering and contact insecticides are largely ineffective. Treatment timing is challenging for JMS due to the fact that the crawler phase is extended throughout the season and their protective waxy covering is laid down in two to three days after feeding is initiated. We suspect that there are two generations of JMS a year, producing crawlers in two peak seasons. More studies are needed, but we suspect that the timing of the emergence of the crawlers will be similar to Tennessee (mid- to late spring and late summer emergences). Closely monitor for crawlers during the spring and summer months with the usage of sticky traps to help aid proper application timing.

If scouting reveals that JMS is present, keep in mind that this is not a one-treatment pest. Good results have been seen with using a combination of different treatment types, such as dormant oil, insect growth regulators and systemic insecticides. Dormant applications of horticultural oil is a treatment option which should be applied at 2% rate in the fall after leaves drop, or in spring before bud break. In fall or spring, apply when temperatures are above 50-60 °F for four to five days. Application of fall dormant oil helps to loosen the scale covers before winter which should increase winter mortality. Be careful of using oil as it can burn plants and some plants are more susceptible to burning (maples, redbud, etc.). When first instar crawlers are present and at peak activity, an insect growth regulator (IGR) can be applied. IGRs prevent the crawlers from developing, resulting in death of the insect. Soil-applied systemic insecticides such as imidacloprid has been shown effective with combination of other treatment types.



More information about the Japanese Maple Scale can be found at:

http:/www.tnstate.eduextensiondocuments/ Japanese_Maple_Scale_in_the_Nursery.pdf

https://www.extension.umd.edu/ sitesextension.umd.edu/files/_docs/ programs/ipmnet/JapaneseMapleScale-UMD-1.pdf

Japanese Maple Scale (located at the tip of pen point) on river birch found at a Missouri nursery. Close examination is required as the scale can blend in with the bark lenticels and crevices. Photo credit: Catherine Smith, Missouri Department of Agriculture.



The Bid Box

Hank Stelzer, MU Extension, School of Natural Resources

Case: Callaway County

The last forester-administered harvest on this 119-acre tract in the Kingdom of Callaway was about 25 years ago. The landowner has an interest in quality deer habitat. So, the forester marked the sale mainly as a thinning, leaving a lot of good-quality trees for acorn production and a future harvest. He also marked some group openings to create some early-successional habitat and encourage new oak seedlings and sprouts.

- Estimated total volume 157,000 bd ft (Doyle Scale)
 - ✓ 138,000 bd ft white oak of which it was estimated that 21,500 bd ft were stave quality and 2,500 bd ft were veneer quality
 - ✓ Remaining 19,000 bd ft were red oak with a few hickory and walnut
- Forester estimated value of \$60,000
- Six bids received:
 - \$82,000
 - \$64,872
 - \$60,000
 - \$28,550
 - \$26,500 \$17,900
- High bidder was a Missouri Master Logger with a good reputation who has worked with this forester in the past.
- Return: \$689/acre

The Bid Box Explained...

The spread in bids was pretty impressive. The forester told me the lower bids were from loggers who typically harvest trees on shares with a landowner and only occasionally buy timber on a lump-sum basis. This is why I personally feel competitive, lump-sum sales are the better way to go, especially if tree quality is good as in this sale. It encourages better utilization of all trees as loggers seek out the best markets for the marked trees.

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

These Guides will help you better understand the ins and outs of marketing your timber and help you help your professional forester!

For more information and a Missouri Managed Woods application: call 877-564-7483 visit: https://mdc.mo.gov/property/property-assistance/missourimanaged-woods

EAB Found on MU Campus

Hank Stelzer, MU Extension - School of Natural Resources

To quote the little girl in the original Poltergeist Movie, "They're heeeer." The emerald ash borer has been found along a row of green ash trees on East Campus Drive across from Clydesdale Hall. The green menace was confirmed in Ashland earlier this year. So, it was just a matter of time before making its presence known on the MU Campus.

According to Pete Miller, Director of Landscape Services, there are 162 ash trees spread across the MU Campus. In FY19, his department spent a little over \$4,600 treating 27 trees in high profile areas with Arbormectin[™]. However, Pete says in the long run, all the ash trees will need to be removed. At an average cost of \$1,000 to remove a single tree, the university is looking at a total removal cost of \$162,000! Then there is the cost of purchasing and transplanting replacement trees.

The demise of the ash trees and the Legacy Oak Project on the Francis Quadrangle, have the Friends of the MU Botanical Garden Advisory Board thinking of ways alumni can ensure the university has healthy greenspaces for future generations of Tigers to enjoy. Stay tuned to Green Horizons for the latest developments.



Image of Emerald Ash Borer. Photo taken from The Arbor Day Foundation



White ash trees along East Campus Drive where EAB was found a few weeks ago.



White ash trees in front of the School of Natural Resource Building





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A Global Center for Agroforestry, Entrepreneurship and the Environment

Calendar of Events

Walnut Council Fall 2019 Field Day

October 19th, 2019 | 8:45am - 4:00pm | Mockingbird Hill Tree Farm, Jefferson City, MO Topics at this year's Walnut Council Fall Field Day will include crop tree release, Timber Stand Improvement, corrective pruning, using dendrometers, and managing toxic fescue. To register, go to http://walnutcouncil.org/state-chapters/missouri// or call Fred Crouse at (573)489-6226. See page 5 of this Green Horizons issue for more information.

Land of the Osages Research Center Grand Opening

October 29th, 2019 [10:00am - 4:00pm] Center for Agroforestry] 30118 Old 8 Rd, Gravois Mills, MO The MU College of Agriculture, Food and Natural Resources has a system of Research Centers spread throughout the state, each with a focus on providing region-specific research and information. CAFNR will add to that system with the grand opening of the Land of the Osages Research Center. It's the first new Research Center in CAFNR's system in more than 30 years. This Center is funded by a donor's estate gift. He wished to build a partnership between the Osage Nation and agroforestry. CAFNR is thrilled that Chief Standing Bear and many other leaders from the Osage Nation will be joining us for the Grand Opening of the Center, which will feature more information about the partnership and agroforestry research. Please register at http://www.cafnralumni.com/ events to attend the morning ceremonies and lunch. A field day will follow.

Arkansas Association of Grape Growers Annual Conference

November 1st, 2019 Fayetteville, AR

The Arkansas Association of Grape Growers (AAGG) will host an annual Conference, Trade Show and Reception in Fayetteville, AR on Friday, November 1st. We have an array of speakers for this workshop to give updates on promoting our grape and wine industries, table and wine grape production, grapevine pest and disease management, liability issues in vineyards, diversifying vineyard operations, and using technology in vineyards. More information at http://argrapegrowers.org/news.

2019 Perennial Farm Gathering

December 6th and 7th | Savanna Institute | Sinsinawa Mound Center, Sinsinawa, IA

This year's PFG will feature keynote speaker Reginaldo Haslett-Marroquín (President and CEO of Regenerative Agriculture Alliance), panels and workshops with Midwest agroforestry experts, perennial food and beverage tastings, and the ever-popular 5-minute Nutshell Show & Tell talks, which are open to all attendees. Other featured speakers include Eliza Greenman, Terry Durham, Tom Wahl, Mike Lilja, Thelma Heidel-Baker, Paul Dietmann, Susan Erem, Greg Padget, Dayna Burtness, Jason Fischbach, and Kevin Wolz. More information and registration is available at http://www.savannainstitute.org/2019-perennial-farm-gathering.html.

Native Plants for Pollinators, Livestock, & Prairie Strips within Row Crops

November 9th, 2019 | 8:30am - 3:30pm | Grow Native! | Bradford Research Center, Columbia, MO During this day-long workshop, five experts will present information on how native plants provide benefits to farm revenues, livestock health, pollinators, wildlife, water quality, and more. The day-long event will also feature information on specific NRCS cost-share programs to which attendees may apply to help offset the cost of incorporating natives into their agricultural or land management practices, and a session on invasive plant control. In addition, this workshop offers five Certified Crop Advisor CEUs. To register, visit www.grownative.org or call 888-843-6739.

Pasture Walk and Producer Field Day

November 9th, 2019 | 1:00pm - 4:00pm | Center for Agroforestry | RRR Ranc, Subiaco, AR During this informative field day, practitioners and natural resources professionals will share their expertise, including Rennie Reynolds (RRR Ranch), Robert Harper (University of AR Extension), Christine Nieman (USDA ARS), Brett Peshet (Green Cover Seeds), and Tom White (Golden Oak Forestry). Participants will have a chance to tour areas in various stages of silvopasture establishment, and learn how timber, forages, and livestock are managed together in an integrated system. For more information and registration, contact Gregory Ormsby Mori at ormsbyg@missouri.edu or (573)882-9866.