

green horizons

Growing tomorrow's future today.

Winter 2019

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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Missouri Tree Farm System to Celebrate Their 70th Anniversary

Laurie Coleman, Executive Director, Forest and Woodland Association of Missouri

The Forest & Woodland Association of Missouri (FWAM) was founded in 2011 as a public advocacy voice for privately owned woodlands to promote healthy, productive and sustainable forests and trees. FWAM achieves these goals by administering programs such as Missouri ForestKeepers and the Missouri Tree Farm System. Members of Missouri Tree Farm System have access to workshops, in-the-woods field days and seminars on forestry and timber-related issues, and receive timely information about important federal and state legislation that could affect our woodlands.

Tree farms are more than short-rotation plantations, they are lands with at least 10 acres of trees or forest with a written forest management plan that addresses water quality, soil conservation, wildlife habitat and timber; they are protected from destructive influences and have been improved or maintained with management activities. FWAM and the Missouri Tree Farm System members are a united voice on behalf of the state's woodlands.

This year, the Missouri TreeFarm System will celebrate its 70th Anniversary on March 1st and 2nd at the Hilton Garden Inn in Columbia, MO.

On the afternoon of Friday, March 1st attendees will have an opportunity to visit Barrel 53 Cooperage in Higbee, MO. Barrel 53 is a family-owned and operated whiskey barrel cooperage and stave manufacturer. Every barrel is aged and refined using premium Missouri White Oak. Tours will be offered of both the cooperage and stave mill, along with tastings. Friday evening, a cocktail reception will take place at Bass Pro Shops in Columbia, followed by a banquet and awards ceremony at the Hilton Garden Inn. Chris Erwin, of the American Tree Farm System, will speak on Advocacy and Legislative Process. Missouri State Forester Lisa Allen will present the annual awards.

Boone County resident Mike Trial was named the Outstanding Tree Farmer of the Year for 2018. Annually,

the Outstanding Tree Farmer of the Year award recognizes private landowners that have done an exceptional job of forest management on their property and are also actively promoting sustainable forestry. Through this award program, these individuals are honored as leaders in good forestry while their land demonstrates the benefits of good forest management.

Mike recently received his 50-year Tree farm certificate. He intensively manages 50 acres of walnut plantations that were planted by him and his father, George.



Mike Trial (left) receives his 50-year Tree Farm sign from Missouri Department of Conservation Resource Forester A.J. Campbell

Saturday will be a day filled with concurrent educational sessions on woodland topics aimed at helping landowners reach their management goals. Concurrent sessions topics include: Black Walnut Initiative, Chestnuts & Ozark Chinquapins, Estate Planning & Succession, Invasive Species, Timber Markets Present & Future, Timber Stand Improvement & Cost Share, Tree Pests & Diseases, and Wildlife Habitat Enhancement. Garret Nowell with Independent Stave will speak during the luncheon on the White Oak Initiative.

This event is open to Missouri landowners and others who are interested in learning more about the benefits of managing woodland areas on their properties. The focus will be on participation in the Tree Farm System, a national program for woodland owners who are committed to sustainably managing their forested property for wood, water, wildlife, and recreation. Visit www.forestandwoodland.org/events for the full agenda and to register.

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First Aid for Storm Damaged Trees: A Sequel

Hank Stelzer, MU Extension, School of Natural Resources

Back in 2004 after the devastating Southwest Missouri ice storm, I wrote an article on first-aid for storm damaged trees. Given the recent snowstorm, I thought a reminder might be in order.

The accumulation of heavy, wet snow left Missourians with leaning trees, broken limbs, split trunks, and even some uprooted trees. Unlike typical ice storm damage, eastern red cedar and other evergreens with dense foliage were severely damaged by the weight of the snow. Bradford pear, eastern cottonwood, river birch, Siberian elm, and silver maple trees were also injured. Trees with coarse branching patterns generally experienced little injury, including Ohio buckeye, hickories, black walnut, bur oak, catalpa, ginkgo, horsechestnut, and Kentucky coffeetree.

In the aftermath of a severe ice, snow or wind storm, many homeowners ask a simple question about their trees: Will they survive?

Assess the Damage

Before writing off a damaged tree as a goner, ask yourself the following questions:

- Other than the storm damage, is the tree basically healthy and vigorous? If the tree is basically healthy, is not creating a hazard, and did not suffer major structural damage, it will generally recover if first aid measures are applied.
- Are major limbs broken? The larger a broken limb is, the harder it will be for the tree to recover from the damage. If a majority of the main branches are gone, the tree may have little chance of surviving.
- Has the leader (the main upward-trending branch on most trees) been lost? In species where a leader is important to upward growth or desirable appearance, this may have to be a judgment call. The tree may live without its leader but, at best, would be a stunted or deformed version of the original.
- Is at least 50 percent of the tree's crown (branches) still intact? This is a good rule of thumb on tree survivability. A tree with less than half of its branches remaining may not be able to produce enough foliage to nourish the tree through the coming growing season.
- How big are the wounds where branches have been broken or bark has been damaged? The larger the wound is in relation to the size of the limb, the less likely it is to heal, leaving the tree vulnerable to disease and pests. A 2- to 3-inch wound on a 12-inch diameter limb will seal over with new bark within a couple of years.
- Are there remaining branches that can form a new branch structure? The remaining limbs will grow more vigorously as the tree tries to replace its missing foliage. Check if branches are in place that can eventually fill out the tree's appearance.
- Is the tree of a desirable species for its location? The best decision may be to remove the tree if the tree is not only seriously damaged but also is in the wrong location, such as a potentially tall tree beneath a power line, or is an undesirable species for the property.

Make a Decision

The questions listed above will help you make informed decisions about your trees. In general, the decision about a particular tree will fall into one of three categories.



Keep it. If damage is relatively slight, prune the broken branches, repair torn bark or rough edges around wounds, and let the tree begin the process of wound repair. A mature shade tree can usually survive the loss of one major limb. The broken branch should be pruned back to the trunk. In the following months, large wounds should be monitored closely for signs of decay. Young trees can sustain quite a bit of damage and still recover quickly. If the leader is intact and the structure for future branching remains, remove the broken branches and let the tree close over the wounds and recover itself.



Wait and see. Resist the temptation to simply cut down the tree and be done with it. Wait a while and think it over. Remember, time is on your side. Carefully prune broken branches. Then, give the tree some time to recover. You can make a final decision later.

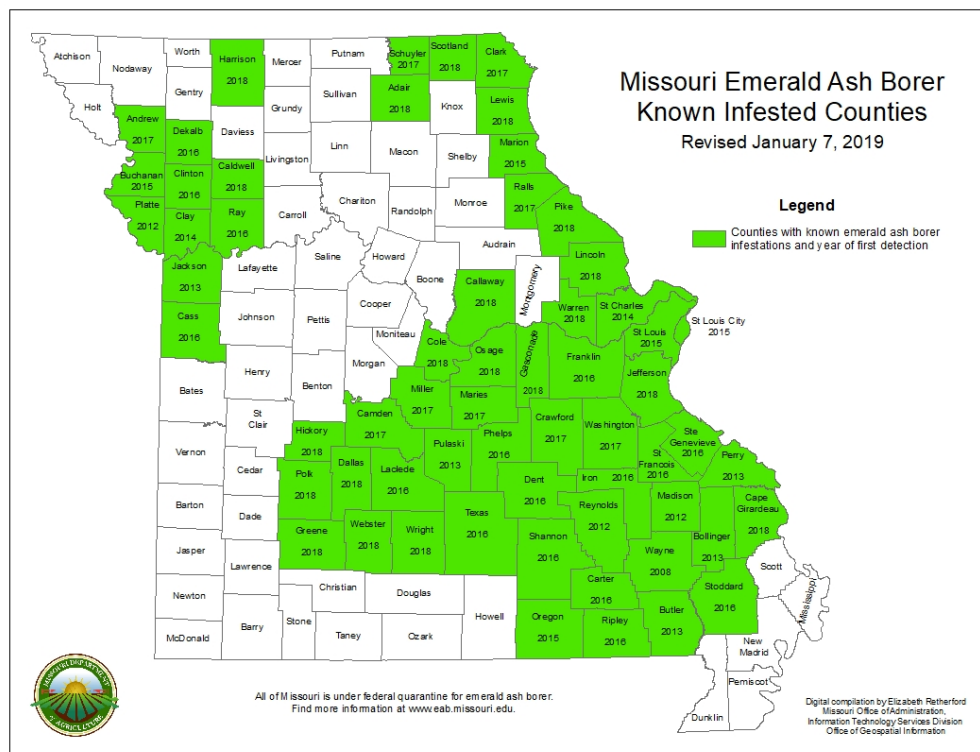
Also resist the temptation to prune too heavily. The tree will need all the foliage it can produce to survive the next growing season. Remove only the damaged limbs, then wait and see how the tree does. For large trees, a professional arborist should be brought in to assess damage on a borderline situation and to safely accomplish needed pruning and branch removal.



EAB Update: Where Are We Eleven Years Later?

Sarah Phipps, Missouri Department of Agriculture

Emerald Ash Borer (EAB) was first discovered in Missouri in 2008 at the Greenville Recreation Area in Wayne County. The small, metallic green beetle native to Asia has decimated billions of ash trees in North America as the larvae feed just under the bark diminishing the water and nutrient conducting tissues. Since the initial quarantine was put in place, the beetle spread to three more counties in 2012, five more in 2013 and two more in 2014. Its march across Missouri has continued ever since. The beetle remains a step ahead by attacking the ash trees from the top down, allowing the beetles to avoid detection in new areas for up to five years before the damage is often noticed. A subsequent tree-ring analysis at the initial Wayne County campsite revealed that the infestation was present for at least five to six years prior to detection. Working on 11 years post ‘first detection’ in our state, EAB is now found in over half of Missouri’s counties – a total of 60 counties and the City of St. Louis! A total of 20 new counties alone were confirmed to have EAB in 2018: Adair, Caldwell, Callaway, Cape Girardeau, Cole, Dallas, Gasconade, Greene, Harrison, Hickory, Jefferson, Lewis, Lincoln, Osage, Pike, Polk, Scotland, Warren, Webster and Wright.



Various management plans have been in place throughout the years across our region, including: city tree surveys, replacing dead and declining ash trees, treating select trees, and also releasing parasitoid wasps that attack the EAB eggs and larvae. EAB traps are being used in counties where infestation has not yet been determined to monitor and provide new detection information so municipalities, landowners and homeowners can make management decisions based on the proximity of EAB. Insecticide treatment should only be considered when EAB has been found within your county or within 15 miles of counties that adjoin infested counties.

<https://agriculture.mo.gov/plants/pests/eab-management-guide.pdf>

EAB serves as a poster child for how an invasive pest can become established in an area. EAB is a devastating pest, especially in city landscapes where ash composes on average 14 percent of the trees and up to 30 percent in other communities. This emphasizes how critical prevention and early detection efforts are for other invasive pests. If an oak-feeding pest, such as the gypsy moth were to establish in Missouri, the results would be horrendous for our forests and our economy. While it’s too late to prevent EAB from getting into our state, we need everyone’s help to avoid further infestations from other invasive wood-boring insects by spreading the word to always purchase local firewood and never move untreated wood farther than 50 miles from where it was harvested to prevent long distance movement of pests.

Missourians can help by learning to identify signs of EAB and report possible infestations in counties where the pest has not yet been confirmed. For a map of EAB’s spread across Missouri and detailed information on identification, visit eab.missouri.edu. Report suspected EAB damage in new counties by contacting MDC’s Forest Pest Office at 866-716-9974 (email: forest.health@mdc.mo.gov) or contacting Missouri Department of Agriculture’s State Entomologist at 573-751-5505 (email: collin.wamsley@mda.mo.gov).

More information about Invasive Forests Pests can be found at:
www.dontmovefirewood.org and www.treepests.missouri.edu

Forest Tree Seedlings: Where to Find Them

Hank Stelzer, MU Extension, School of Natural Resources

The old saying goes, “The best time to plant a tree was 50 years ago and the second best time is today!” I would like to offer a corollary. The best time to order tree seedlings is the previous fall and the second best time is today!

I realize the ground is frozen in many parts of Missouri (and the rest of the Midwest for that matter) and there is snow on the ground, too. So, if you are a new woodland owner, the thought of planting trees on that old, abandoned field is probably the farthest thing from your mind. However, it won't be too long before the forsythias begin blooming signaling the arrival of spring... and time to plant trees!

Depending upon the species, the seedlings you are about to plant began their life 18 to 24 months ago back when seeds were gathered from a production seed orchard by state or commercial operators, or perhaps from a walnut tree growing in some field by a local youth group. Once in the hands of the nursery manager and his or her team, they were carefully cleaned and sown in a properly prepared nursery bed complete with all the nutrients a germinating seed needs.

From fending off a variety of predatory critters eager to feast on the buffet in the nursery bed; to supplying water when Mother Nature refused to do so; to weeding (oftentimes by hand) the nursery garden; to controlling attacks from a variety of insects and diseases, the manager carefully watched over the crop until it was time to gently lift the seedlings from their beds and store them until it was time to ship your order to your doorstep.

Sometime late last summer, the managers took stock of their crop and developed their catalog of seedlings that would be available for spring planting. These catalogs normally come

out around the first of November. The prudent landowner has already placed their order. So, in some cases, either by virtue of short supply or high demand, some species may no longer be available to those who hit the snooze button last fall.

But, as I said the second best time to plant, or should I say order, your seedlings is today!

At the end of this article, I have compiled a list of forest tree seedling nurseries in Missouri and in neighboring states. Many are owned and operated by a state agency. Two are private commercial nurseries here in the Show-Me State, and I am certain similar private enterprises exist in those other states.

I have included hyperlinks to each nursery's website. There you will find information regarding what species are still available, pricing (every nursery differs in pricing due to their production costs), and even tips on proper planting techniques. The variety and quantity each entity offers will vary from year to year depending upon many factors not necessarily related to seed availability. So, if you prefer a particular nursery, you might hold off planting this year in hopes the species of your choosing will be available next year (assuming you get your order in early). Or, you might want to check into a neighboring nursery if you are heaven-bent in planting this year. Just remember, seedlings bought from other parts of the country might not be adaptable to Missouri. This is one reason, with the exception of Indiana, I limited my list to neighboring states.

Also, keep in mind Missouri is a very large state. The planting season in southern Missouri will begin and end sooner compared to those living along the Iowa state line.

Missouri

Missouri Department of Conservation
George O. White State Forest Nursery
14027 Shafer Rd
Licking, MO 65542
573-674-3229

Ripley County Farms Seedling Nursery
P.O. box 614
Doniphan, MO 63935
573-996-3449

Forrest Keeling Nursery
88 Forrest Keeling Ln
Elsberry, MO 63343
800-356-2401

Iowa

Iowa Department of Natural Resources
Iowa State Forest Tree Nursery
2404 S Duff Ave.
Ames, IA 50010

Arkansas

Arkansas Forestry Commission
Baucum Nursery
1402 Hwy 391 N
North Little Rock, AR 72117
501-907-2485

Illinois

Illinois Department of Natural Resources
Mason State Tree Nursery
17855 N County Road 2400E
Topeka, IL 61567
309-535-2185

Indiana

Indiana Department of Natural Resources
Vallonia Nursery
2782 W County Road 540S
Vallonia, IN 47281
812-358-3621
515-233-1161

[see boxed note on pg 5 about quarantine restrictions]

First Aid for Storm Damaged Trees *continued from page 2*

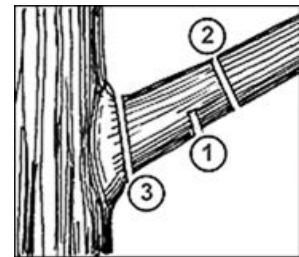


Replace it. Some trees simply can't be saved or are not worth saving. If the tree has already been weakened by disease, the trunk is split, or more than 50 percent of the crown is gone, the tree has lost its survival edge. A rotten inner core in the trunk or structural weakness in branching patterns can cause a split trunk — the tree equivalent of a heart attack. The wounds are too large to ever mend, and the tree has lost its sap lifeline between roots and leaves. This tree is all but dead.

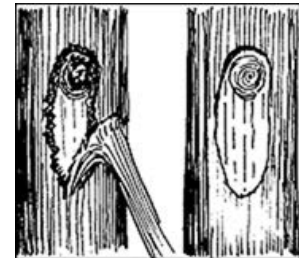
Basic tree first aid you can provide

Resist the urge to over-prune. Don't worry if the tree's appearance isn't perfect. With branches gone, trees may look unbalanced or naked. You'll be surprised at how fast they will heal, grow new foliage and return to their natural beauty.

Remove any broken branches still attached to the tree. Removing the jagged remains of smaller broken limbs is a common repair property owners can make after a storm. Done properly (see photo, right), it will minimize the risk of decay agents entering the wound. Prune smaller branches at the point where they join larger ones. Cut large broken branches back to the trunk or a main limb. As you prune, make clean cuts in the sequence shown in figure to the left to help the tree to recover faster.



Repair torn bark. To improve the tree's appearance and eliminate hiding places for insects, carefully use a sharp chisel or knife to smooth the ragged edges of wounds where bark has been torn away. Try not to expose any more of the cambium (greenish inner bark) than necessary because these fragile layers contain the tree's food and water lifelines between roots and leaves.



Don't top your trees! Untrained individuals may urge you to cut back all of the tree's branches in the mistaken belief that reducing the length of branches will help avoid breakage in future storms. Although storm damage may not allow for ideal pruning cuts, professional arborists say that "topping" — cutting main branches back to stubs — is one of the worst things you can do to a tree. Stubs tend to grow back many weakly attached branches that are even more likely to break when a storm strikes.

Also, the tree will need all its resources to recover from the stress of storm damage. Topping the tree would reduce the amount of foliage, on which the tree depends for the food and nourishment needed for regrowth. A topped tree that has already sustained major storm damage is more likely to die than repair itself. At best, its recovery will be retarded, and it will almost never regain its original shape or beauty.

Missouri has a state-level exterior quarantine restricting movement of untreated walnut materials, including Juglans seedlings, and untreated firewood from several eastern (MD, NC, OH, PA, TN, VA) and western (AZ, CA, CO, ID, NM, NV, OR, UT, and WA) states to help protect Missouri's black walnut resource from Thousand Cankers Disease (TCD). Indiana is no longer considered quarantined, as they have shown by extensive survey efforts that the TCD complex (beetle and fungal pathogen together in a living tree) has not been detected. Some states, including Indiana, have detected either the walnut twig beetle, or the Geosmithia fungus separately in different locations, but this does not trigger a quarantine. Only the walnut twig beetle and the Geosmithia fungus together in a standing tree will cause a quarantine response from states.

Updates on Missouri's TCD quarantine may be found at <https://agriculture.mo.gov/plants/pests/thousandcankers.php>.

Bringing Back Missouri Native Forests: Place-Based Education in Columbia Public Schools

Mike Szydowski, K-12 Science Coordinator, Columbia Public Schools

Four years ago, the Missouri Department of Conservation put out a small publication around Thanksgiving that explained that almost anything green in Missouri forests that time of year was likely the invasive bush honeysuckle. At that time, I realized how big of an issue this is for the health of Missouri trees and forest communities. Driving around Columbia Missouri in late fall, I saw that our forests had transformed into a sea of honeysuckle. Upon further research, we discovered that over time, our forests would lose their age structure, as this pervasive plant would limit tree regeneration due to competition for light. We determined that something had to be done, and we had the kid-power in Columbia Public Schools to make it happen.

We developed the following plan to engage students with place-based education, which involves teaching our current standards in the context of the importance they have on our place. An overwhelming amount of research has shown that much of the disconnect students experience in school is related to a lack of connection between the learning standards and the student's community and/or home.

Education

We have taught about changes in ecosystems, including the introduction of invasive plants, for quite a few years. The students knew about it, but hadn't been engaged with the content.

We changed this by taking classes on tours of their neighboring forests and parks. We learned that these places were rarely visited due to the thick wall of honeysuckle preventing easy access.

Removal and Observations

We purchased a set of gloves and loppers and allowed students to clear plots of bush honeysuckle with the permission of the Columbia Parks department. Adults followed after each session, treating the stumps to prevent regrowth. Students then observed the cleared plots and quickly noticed that there were virtually no plants left other than the existing dominant trees. No tree seedlings. This had an unexpectedly profound effect on the students; they wanted to remove more of the honeysuckle. We worked with classes that kept asking us to come back. We had parents telling us that as they took weekend family hikes, their kids pointed out all the invasive

species along the trails. This kind of reaction never occurred before we took the kids out for this type of community service and learning project. We even had numerous instances when students asked to give up their recess to remove honeysuckle so they could save the native plant communities in the forest next to their school.

Millions of Invasive Plants Removed

As we continued this effort, we put out a challenge to remove one million honeysuckle plants. We reached that goal in the first 6 months and quit counting after it reached over 2 million plants. The program has since expanded to many more schools and natural areas and now includes biodiversity studies of cleared vs. not cleared areas as well as seedling plantings for areas that were deemed to have insufficient young trees after clearing. To date, students have removed substantial areas thick with honeysuckle in Fairview Park, Bonnie View Nature Sanctuary, Garth Nature Area, Smithton Park, and Overland Park, and the work continues all year long.

Many of these spaces are now accessible for class use, and have been replanted with native tree seedlings where appropriate.

We understand that our impact on invasive honeysuckle is limited, but our goal in the Columbia Public School Science Department is to keep our students enthused about making a difference in their community and saving important forest ecosystems within and around the city for everyone's enjoyment. We believe our department can be a model demonstrating that if kids can make this much of a difference, others can too. It has been a very rewarding experience.

The key to place-based learning is to motivate teachers to stray from the traditional classroom where students are expected to sit at their desks for long periods of the day. The perceived loss of teaching time is more than made up for in the health, behavior, and place-based gains that programs like this have.

If you would like to learn more about place-based learning and how CPS Science Department enacted the lesson plan "Bring Back Missouri Forests", contact Mike Szydowski at MSzydowski@cpsk12.org

To Fertilize, or Not to Fertilize? That is the Question!

Hank Stelzer, MU Extension, School of Natural Resources

I often get asked the question by woodland owners, “Should I fertilize my trees? And if so, what should I apply, when, and how much?” After a brief pause (for dramatic effect), I reply in my most professional Extension voice, “It depends.” Seriously, these are very valid questions and it truly does depend; it depends whether you are managing a walnut (or other fine hardwood) plantation or a natural woodland, the predominating soil type, and the nutrient levels found in both the soil and the trees.

Walnut Plantations

The most common justification for spending one’s time and money on fertilizer is for early tree growth and increased nut production once the trees begin bearing nuts. Vegetative growth (shoots and roots) and reproductive growth (flowers and nuts) require a lot of nutrients to keep trees healthy and productive.

Nitrogen (N) is usually the most in-demand nutrient in a tree. This is because it is involved in cell growth and development throughout the entire tree. Two other nutrients, phosphorus (P) and potassium (K) are normally applied at the same time nitrogen is applied. Hence, the reason most formulations contain all three elements. The numbers on a fertilizer bag represent the percent by weight of each element. Conventional fertilizer labeling lists in order the percentage of actual nitrogen, and the percentage of phosphorus and potassium expressed in the oxide form. For example, a 50-lb bag of 10-5-5 indicates that it has 5 lbs of actual nitrogen, and 2.5 lbs each of P₂O₅ and K₂O.

For young walnut trees, only a minimum fertilization is required. Many producers apply ¼ to ½ cup of a balanced, general purpose N-P-K 15-15-15 fertilizer to every young tree two times during the growing season; one application in March and the second one in June. This is to ensure sustained growth throughout the growing season. The trees must be watered after the fertilizer is applied. If one misses the June application, do not apply it later than the Fourth of July. A late application of nitrogen may favor continued growth into September and cause trees to be susceptible to damage from an early frost.

Once the plantation begins producing nuts, most producers apply nitrogen fertilizers with conventional equipment across the entire orchard floor, again in two applications; 60 lbs. actual nitrogen/acre during the first part of March and 40 lbs. actual nitrogen/acre in June.

While this is a common practice, it is necessary to do your own research before fertilizing. Every field is different and has different needs. Checking the soil nutrients and pH is vital before applying any fertilization method. Leaf analysis is very important in order to diagnose and correct nutrient deficiencies in walnut trees.

Soil samples should be taken during the winter months before any fertilizer is applied in the spring. Foliar samples should be taken after the leaves are fully expanded (usually late June) and before the tree begins to redistribute nutrients to other parts of the tree for nut production and in preparation for the coming winter. In both cases, one should take random samples across the plantation, combine them together, and then take a sample from the bulk collection. Contact your regional Extension agronomist for assistance. They will be happy to help!

Table 1: Optimum or normal concentrations of mineral nutrients in walnut foliage in late June through July (from Reid et al. 2009. Growing black walnut for nut production. MU Agroforestry in Action AF 1011-2009)

Element	Dry weight conc.	Normal range
Nitrogen (N)	Percent	2.2 to 3.5
Phosphorus (P)	Percent	0.2 to 0.33
Potassium (K)	Percent	0.9 to 2.0
Calcium (Ca)	Percent	1.2 to 2.5
Magnesium (Mg)	Percent	0.3 to 0.6
Iron (Fe)	ppm	50 to 200
Manganese (Mn)	ppm	25 to 220
Zinc (Zn)	ppm	20 to 80
Boron (B)	ppm	30 to 80
Copper (Cu)	ppm	5 to 20

A word of caution when interpreting soil and foliage test results. While scientists may have determined “optimum nutrient concentrations” in black walnut foliage (Table 1), getting mineral nutrients applied to the soil into the leaves to achieve those “optimum” levels can be another story. This is because nutrient availability in the soil is determined by many factors, from soil structure to pH to level of organic matter to...well, you get the picture. And trees are like people: no two individual trees take up nutrients and utilize them the same way. Once again, your Extension agronomist can help you interpret test results and determine the best course of action.

The Bid Box

Hank Stelzer, MU Extension, School of Natural Resources

This edition of The Bid Box comes courtesy of a Missouri consulting forester. Every issue I send out the call for recent timber sales. And every issue they answer the call. Thank you!

Daviess County, Missouri

- 49 acres
- 178 marked trees; 75 were walnut with remainder being mixed species
- Estimated total volume: 53,996 bd. ft.; 13,899 bd. ft. were walnut (Doyle Scale)
- Estimated value of the sale was \$25,000
- Five bids received
 - \$26,478.00
 - \$25,937.00
 - \$25,133.35
 - \$21,020.00
 - \$15,719.00
- Forester recommended and landowner took the high bid
- Return: \$540/ac
- The main takeaways
 - The closeness of the top three bids really reflected current market conditions. It made the landowner feel comfortable he received a fair price.
 - High bid was from the logger farthest away from the sale. Low bid was from the logger closest to the sale. The forester called the low bid the “knock on the door” price. Always place your timber out for bid!

As always, it pays to have a professional forester market your timber. Not only will they help you get the highest price for the trees in your woodlots that need to be harvested, but they can help ensure future harvests are profitable, too! 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!

St. Roberts Man Sentenced for Stealing Timber from the Mark Twain National Forest

Richard McKinnon, 38, of St. Roberts, Missouri, was sentenced to 18 months in prison on Thursday for theft of Government property. He appeared in federal court before U.S. Eastern District of Missouri Judge Stephen Limbaugh.

According to court documents, between September of 2016 and December of 2016, McKinnon and his co-defendants, Dale Connour and Delmar Connour felled walnut trees located on federal land, from the Mark Twain National Forest in Laclede County and Pulaski County. They removed at least 39 trees without authorization from the Mark Twain National Forest and then sold the stolen timber at a walnut sawmill located in Texas County, Missouri. McKinnon and the Connours damaged at least 21 trees as a result of driving prohibited vehicles onto restricted areas of the Forest in order to cut down and remove the walnut trees. The total estimated value of the National Forest timber and the cost of rehabilitation to Nation Forest land was \$35,862.50.

Asian Longhorned Beetle in Missouri

Sarah Phipps, Missouri Department of Agriculture

The Asian longhorned beetle, or ALB, kills maple trees among a long list of other hardwood trees – help watch for it in Missouri. The Missouri Department of Agriculture is evaluating host trees this winter for signs of Asian longhorned beetle. So far, ALB has not been detected in Missouri.

Surveyors are looking for perfectly round exit holes (3/8 inch in diameter) in the upper canopy of maple species (*Acer* spp.), including boxelder, Norway, red, silver, sugar, and sycamore maples. Other known hosts are horse chestnut, black locust, elms, birches, willows, poplars and green ash.



Photo source: <https://www.youtube.com/watch?v=yh6hyMNNOW0>

How you can help

- Keep an eye out for ALB in the summer through fall. Check your trees regularly for this insect and look for damage it causes.
- ALB measures 1 to 1.5 inches in length with long antennae.
- Their bodies are black with small white spots, and their antennae are banded in black and white.
- View photos of tree damage and beetle look-alikes at MU Extension’s Tree Pests website www.treepests.missouri.edu
- Watch the educational ‘Healthy Trees-Healthy Cities’ video: <https://www.youtube.com/watch?v=yh6hyMNNOW0>

Report it!



There are two ways to report an ALB suspect:

- Use the online form: <https://extension2.missouri.edu/v3?p=6>
- Contact Missouri Department of Agriculture’s State Entomologist by emailing collin.wamsley@mda.mo.gov or calling 573-751-5505.

Before reporting it, please record the area where you found the insect or damage. If possible, capture the insect you think is ALB, place it in a jar, and freeze it. This will preserve the insect for easy identification. Take photos of the entire tree, a close-up of the leaves and any noticeable symptoms on the tree.

To Fertilize or Not to Fertilize? *continued from page 7*

What About Woodland Trees?

Some woodlands are naturally flush with nutrients. Plant-available minerals in the soil come from the weathering of rocks, deposition of soil relocated from somewhere else, and from the recycling of decomposed organic matter from dead plants and animals on the site. Their continual cycling between soils and trees is vital to the maintenance of soil minerals. But, some soils are just naturally depauperate and some have been exhausted by erosion or poor management practices. Minerals can also be leached from soil over time. Such losses of essential nutrients lead to deficiencies that reduce growth and jeopardize forest health.

So can you fertilize a woodland? Yes. Is it practical? Probably not. Also, keep in mind there are many possible reasons beyond fertility why your woodland might be exhibiting slow growth, discolored or misshapen foliage, or dieback. Fertilization simply will not fix the limitations of a site that is too wet or too dry, and it cannot overcome improper harvesting practices that erode soils or damage tree stems and roots.

Similarly, fertilization cannot prevent defoliation by insects (in fact, it might just nourish them). And an overcrowded stand where trees have no room for expansion will likely benefit far more from a good thinning. Fertilization won’t improve the growth of trees already growing on a nutrient-rich site, and if overdone, it can actually have a deleterious effects on trees and the greater environment. Indeed, high soil concentrations of even the most essential nutrients can be toxic to plants and excessive nutrients can run off and pollute nearby waters. Fertilization may be a workable idea if you are trying to reforest an abandoned field and you are heaven-bent on restoring its vegetation. Otherwise, it’s probably not worth the associated expense, practical difficulties, or environmental risks.



Species Spotlight: Honeylocust

Mike Gold, Interim Director, Center for Agroforestry

Well known as an ornamental street and yard tree, honeylocust, (*Gleditsia triacanthos* L.), grows naturally in the eastern half of the United States. It has become naturalized east of the Appalachian Mountains from Georgia to New England in the East, and north to South Dakota in the West. In its natural habitat, honeylocust is a minor component in riverine forest associations in the eastern United States.

Ornamental. Because it is resistant to both drought and salinity, compact, poorly aerated soils and tolerates flooding, horticultural selections of thornless honeylocust (*Gleditsia triacanthos* var. *inermis*) have been widely planted as an ornamental in parking lots; highway medians; lawn specimen trees; and residential street trees. The tree has been successfully grown in urban areas where air pollution, poor drainage, compacted soil, and/or drought are common in the United States and Canada with over fifty recognized cultivars. Honeylocust has small, pinnately compound leaves and casts a light shade that permits excellent grass (forage) growth underneath the tree.



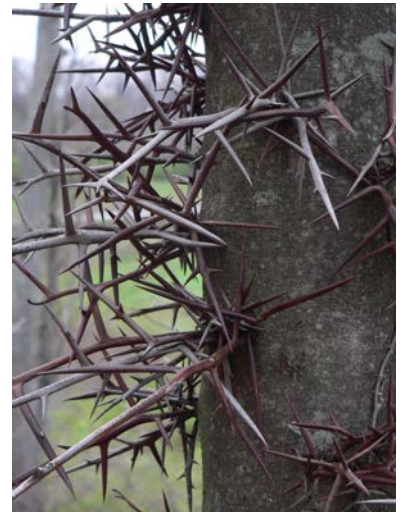
Honeylocust silvopasture at Virginia Tech, Blacksburg, VA

Botany. *Gleditsia triacanthos* L., family Leguminosae (subfamily Caesalpinioideae), are typically 45-75' feet in height and 1.5 - 3.0 feet in diameter (maximum height 150 feet, diameter 6 ft). Ornamental trees often have a short bole and open, narrow or spreading crown with reddish brown to black scaly ridged bark. Wild trees are often covered in clusters of large, branched thorns. Leaves are 4-8" long, deciduous, pinnate or bi-pinnate with 15-30 leaflets, ½" - 1" long. Mature pods, 6-15" long, begin to fall by mid-September and continue to drop throughout the winter.

Wood Quality. The wood of honeylocust is strong, hard and durable, resistant to shock, with attractive figure and reddish-brown color, it is used locally for fence posts, pallets, crating, general construction, railroad ties and by woodworkers for making guitars. Wood specific gravity is 0.60 green, 0.67 oven dry and is considered an excellent source of fuelwood.

Thorny Nightmare? Useful Tree for Silvopasture and Animal Fodder ? Both.

In addition to its widespread use as an ornamental, honeylocust is also widely known to rural America as a nasty, thorny, nightmare. The multi-branched woody thorns of honeylocust (actually modified branches) can cover the trunk and branches in a formidable sheath of hardened spines. As such, when wild honeylocust invades open pastures, it is rightly viewed by most as a nuisance to be cut and removed. Thorns on mature trees (twigs, branches and bark) are extremely dangerous as they can puncture tractor tires and heavy duty boots. Volunteer reproduction of thorny seedlings, usually derived from seeds eaten and not digested by wild and domestic animals, is also a concern.



Silvopasture Agroforestry. Promoted in J. Russell Smith's *Tree Crops: A Permanent Agriculture* (1929) honeylocust was widely advocated as a supplemental livestock feed (edible pods) early in the 20th century. A search for heavy-bearing honeylocust selections led to silvopastoral cultivar development in the 1930's at the Tennessee Valley Authority and at Auburn Alabama resulting in named cultivars including 'Millwood' and 'Calhoun' selected for their large and heavy pod production. Mature pods begin to drop by mid-September and continue to drop throughout the winter.

Silvopasture Establishment. Due to large variation in pod production from different parent trees, and the presence of both male and female trees, only grafted seedlings are recommended for planting in order to secure consistently high production at an early age. Grafted trees will eventually produce from 40-150 lbs of pods (dry weight) per tree biennially. Of interest for silvopasture, honeylocust thorns are a juvenile wood trait and the upper branches of a thorny honeylocust are thornless. You can take grafts from thornless upper branches and graft them to honeylocust seedling rootstock to obtain a phenotypically thornless, heavy pod-bearing tree for use in silvopasture. Again a caution: If the seedlings derived from the pods of these grafted trees are allowed to grow up in the pastures, they will be thorny, but if constantly grazed in a managed intensive grazing silvopasture system, they will not become an issue.

continued on page 11



Species Spotlight: Honeylocust *continued from page 10*



Honeylocust pods have long been recognized for their animal fodder value in silvopastoral systems. Widely spaced overstory fodder trees can be planted for on-farm silvopastoral systems, providing light shade, soil enrichment and stabilization, and are compatible with a variety of understory forages. In addition to yields from understory forage and provision of shade for livestock during the summer, the pods function primarily as a late fall/winter animal feed supplement.

Windbreaks. Honeylocust is hardy and drought tolerant, and can be grown in windbreaks with the added benefit of pod production.

MU Extension Offers Free Woodland Management Webinars

University of Missouri Extension will be offering a free series of four weekly, live webinars on basic woodland management, Thursday evenings from 6 to 8 p.m. beginning February 21.

February 21: How natural and human factors shaped forests in the region and the importance of this knowledge when developing management plans and practices on forests.

February 28: Basic characteristics of existing hardwood stands, how to evaluate their potential, and basic decisions on future management strategies to make them profitable and sustainable.

March 7: Woodland threats from insects and disease to invasive plants. Basic pest principles and simple practices to help maintain woodland health and productivity.

March 14: Basic wildlife management principles and concepts, and habitat requirements of various wildlife that occur across the region.

The webinars will be “live” in the following 15 Missouri counties: Atchison, Boone, Buchanan, Callaway, Camden, Cape Girardeau, Cole, Crawford, Franklin, Greene, Madison, Marion, Putnam, Phelps, Texas and Wright. The webinars will be taped and offered again in 2019 at other county MU Extension Centers.

Participants will be able to chat directly with the presenters. Plus, natural resource professionals will be on-hand at most sites as well. Not every county will be offering every session, so check with the county Extension Center to see what sessions they will offer. Registration is required.

Missouri landowners own roughly 85 percent of the state’s 15.6 million forested acres. These same acres support a \$10 billion dollar forest products industry in the state. However, roughly 9 out of 10 Missouri woodland owners do not manage their woodlands. This lack of management threatens the health and productivity of their trees. And the threat increases with each passing year of inattention.

Think of your unmanaged woodland as an untended garden. One doesn’t plant a garden and then walk away only to return at the end of the growing season expecting to reap the rewards of weeks of inattention. The same can be said of one’s woodlands, if on a slightly longer time frame.

Sometimes the hardest step to take on a long journey is the first one. But, you do not have to take it alone. There are natural resource professionals in your backyard to help you. All you have to do is take that first step.

Calendar of Events

Missouri Tree Farm 70th Anniversary Celebration

March 2, 2019 | 8:00 am to 4:00pm Saturday | Columbia, Missouri

This meeting will be a day filled with concurrent educational sessions on woodland topics aimed at helping landowners reach their management goals. This event is open to Missouri landowners and others who are interested in learning more about the benefits of managing woodland areas on their properties. More info and registration (closes Feb. 22nd) <https://forestandwoodland.org/new-products/saturday-session-registration-lunch-included>

Cover Crops and Soil Health: The Practical Way Forward

February 20-21 | Midwest Cover Crops Council | Springfield, Illinois

This annual meeting of the Midwest Cover Crops Council will feature state reports, listening sessions, poster sessions, speakers, panel discussions, exhibits, and more. More info at <http://mccc.msu.edu/about/meetings/>.

30th Annual MOSES Organic Farming Conference

February 21-23, 2019 | Midwest Organic & Sustainable Education Service | LaCrosse, Wisconsin

The MOSES Organic Farming Conference is the largest organic and sustainable farming event in the US, offering 60 workshops over 6 sessions, inspiring keynotes, engaging roundtables, and a resource-packed exhibit hall with over 170 vendors. Organic University, day 1 of the conference, provides full-day classes that dig deeper into specific farming topics. More info and registration at <https://mosesorganic.org/conference>.

Tree Fruit Production for Small-Scale Farmers

February 26, 2019 | Solid Ground Farmer Trainings | Bethel, Connecticut

This free evening session is part of the University of Connecticut's Solid Ground Farmer Training Program. This course will focus on tree fruit productions and will cover site selection and preparation, soil requirements for various tree fruit, varieties, planting and care, proper harvesting, and integrated pest management for select insects and diseases. More info at <https://newfarms.uconn.edu/solidground/>

Woodland Management Webinar Series

February 21 & 28, March 7 & 14, 2019 | 6:00-8:00pm | University of Missouri Extension

University of Missouri Extension will be offering a free series of four weekly, live webinars on basic woodland management. More details provided on page 11.

Forestry Workshop

March 19, 2019 | 5:30-8:30pm | Hurstville Interpretive Center, Maquoketa, Iowa

Learn about agroforestry practices (forest farming, silvopasture and alley cropping, high value crop trees (chestnut, hazelnut etc.), how to improve the quality of your timber, and update on timber prices, management of invasive species, improved wildlife habitat, and an update on the Emerald Ash Borer. Speakers include Mike Gold, Tom Wahl, Dave Grossman and Vince Waters. For more information, contact Maquoketa NRCS office at (563)652-2337 ext. 3.

2019 North American Agroforestry Conference

June 24 - 27, 2019 | Association for Temperate Agroforestry | Corvallis, Oregon

The Association for Temperate Agroforestry will convene for the 16th AFTA Biennial Conference, this year focusing on Agroforestry for Sustainable Production and Resilient Landscapes. More information at <https://afta2019.org/>.

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