# green horizons

*Growing tomorrow's future today.*

**Spring 2020**

**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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**Editors: Mike Gold, Hank Stelzer, Hannah Hemmelgarn, and Raelin Kronenberg**


## Participatory Chestnut Breeding:

### Creating a Participant Network to Characterize Genetic Diversity and Grow the Midwest Chestnut Industry

*Ron Revord and Michael Gold*

Over the past 25 years, U.S. chestnut cultivation for nut production has increased through grower-led advancement. In the Midwest, a predominant reason for this growth is the long-standing, steady progress made by exceptionally dedicated growers and the University of Missouri Center for Agroforestry partners to develop regional markets. Grassroots chestnut production over the past decade has led to the successful establishment of multiple farmer cooperatives (e.g., Michigan, Ohio, Iowa) and many new regional markets in the Midwest. Multiple years of market research indicate that annual demand exceeds supply (Gold et al. 2006; Gold and Cai 2019) and that chestnut cultivation must expand accordingly. In fact, the number of chestnut farms in the United States grew by 57 percent from 2012 to 2017, hundreds of which are now approaching mature bearing years including over 400 new chestnut farmers in midwestern and neighboring states (NASS, 2017).

In the late 1990's, the University of Missouri's Center for Agroforestry initiated an extensive germplasm collection and evaluation effort for Chinese chestnut (*Castanea mollissima*) and interspecific hybrids (Mori et al. 2018). The majority of chestnut orchards in the region are primarily comprised of half-sibling seedling families from open-pollinated Chinese chestnut cultivars, with unknown local performance specificity needed for long-term success. However, these plantings can contribute to the identification of superior trees that have recombined desirable traits and improved adaptability (Miller, 2003; Anagnostakis, 2012). Currently, there are more than 7,000 chestnut seedlings of bearing age (representing 20 half-sib families) on farms in the Midwest.

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## Ceasing the Sale of Invasive Plants

### New Initiative Aims to Stop Invasive Plant Problems Before they Start

*Carol Davit and Tina Casagrand*

As tree farmers know, non-native, invasive plants can threaten the growth of trees, the profitability of tree harvests, and the forest products industry overall. More broadly, invasive plants negatively impact native plant health and biodiversity in both agricultural and natural systems in Missouri. Outdoor recreation including hunting, fishing, and hiking—and the money that the outdoor industry generates—can also be negatively affected.

The Missouri Invasive Plant Task Force (MoIP) seeks to stop many invasive plant problems not only for tree farmers—but for all Missourians—before they start. This year, MoIP is seeking stakeholder involvement for ceasing the propagation, sale, and intentional distribution of invasive plants in our state. Following robust input from the agriculture, horticulture, conservation, and other sectors, MoIP will seek legislative support.

This proposed rule to cease the sale of invasive plants is different from the Missouri Noxious Weed Law, discussed on page 3.


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## IN THIS ISSUE

Presently, each of several Midwestern states are annually producing tens of thousands of pounds of chestnuts that meet the high-grade standards for local markets. All of this production is sold out within two months of harvest (typically within weeks). Growth in demand continues to outpace supply, even as mature orchards and plantings expand. In 2018, Iowa growers (68) took 40,000 lbs. of high-grade chestnut to market through the Prairie Grove Growers cooperative. Production capacity from 59 individual Missouri growers ranges upwards from 10,000 lbs. In Ohio, growers of the Route 9 Cooperative have steadily increased production to 100,000 lbs. with 75 farms of bearing age. Similar trends have been observed in a half dozen other states in or neighboring the Midwest. All of these states have a roughly equal number of young, non-bearing orchards, increasing the number of bearing farms from 330 to over 600.

Image: Roger and Kay Smith, Prairie Grover Chestnut Growers, http://prairiegrovechestnutgrowers.com/

The economic success of chestnut as a tree crop is dependent upon consistent yields and high nut quality, both complex traits. In general, Chinese chestnuts have desirable nut characteristics, including a round shape and preferable size (12 g), a detachable pellicle, and widely loved flavor and texture. This species also has good to superior blight resistance, excellent phytophthora resistance, and cold hardiness. However, Chinese chestnut yields are half that of the Euro-Japanese hybrids, which are favored in low frost areas such as California and parts of Europe. Now, the breeding need for chestnut is to identify and combine desirable attributes into an elite group of superior parents with known combining ability, while expanding the genetic base to increase stress resistance and minimize nut defects. Thus, there is a need to systematically identify exceptional individuals in the expanded on-farm gene pool.

This year, the University of Missouri Center for Agroforestry, in collaboration with the University of Notre Dame and several grower partners, received a 3-year, $923,155.00 grant from the USDA Specialty Crop Multi-State Program to respond to this need by creating a participant network to characterize genetic diversity of superior on-farm germplasm and support the growth of the Midwest chestnut industry. The project team will formalize a participatory network of chestnut growers to characterize on-farm germplasm and assemble sets of superior selections.

The main objectives of this project are to:

(i) Develop a database of on-farm chestnut germplasm in the Midwest;
(ii) Expand the genetic base of Phytophthora root rot resistance in Castanea germplasm;
(iii) Characterize the phenotypic diversity of top database selections; and
(iv) Characterize the diversity, parentage, and ancestry of the database selections.

Building genetic improvement efforts from this pre-existing material capitalizes on decades of farmer investments and evaluations, and creates an opportunity to assemble the improved genetic base necessary to establish a dedicated breeding program that can support future growth of the Midwest chestnut industry.

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*Continued from cover page*

**The MoIP Invasive Plant Assessment**

When it began five years ago, the first priority for MoIP was to create a comprehensive list of existing and potential invasive plant species in Missouri, and to rank this list according to the invasive nature of each plant. This list, completed and made public in February 2019, is the foundation upon which MoIP's Cease the Sale initiative was created.

Creating the list and ranking it was a multi-year effort. Starting with its network of local, state, and federal agencies and private industries, MoIP sought input from experienced field biologists in Missouri to rank a list of 142 invasive species, compiled largely by MoIP member Dr. Quinn Long, the director of Shaw Nature Reserve. MoIP sent detailed ranking guidelines to reviewers, along with a detailed spreadsheet to complete with their observations. The guidelines are available at the MoIP website (moinvasives.org), to consult.

MoIP received 26 reviews, which ranked each species in each of Missouri's primary ecological regions according to the following:

- **Impact**: level of severity of the species on natural communities in each of Missouri's primary ecological regions
- **Current abundance**: 10s of plants? 100s? 1,000s?
- **Trends in distribution and abundance**: estimation of how rapidly a species' range will expand to form new occurrences over the next 10 years, based on the reviewers' observations and knowledge of specific regions

The ranked list of 142 species is available at moinvasives.org, and maps illustrating impact, abundance, and trends are available for each species. MoIP is currently developing technology to update the list and maps in real time, with ongoing reviewer input.

**Ceasing the Sale of Invasive Plants**

Private property owners, communities, farmers, business owners, public utilities, and tax-supported state and federal agencies suffer economic losses controlling invasive species. While many people are exerting effort to control invasive plants on the ground, currently no rules exist to stop the ongoing sale of known invasive plants in the state. As Missourians have seen in one recently popular example of the Callery (Bradford) pear invasion, even plants thought to be sterile are exhibiting significant invasive characteristics in the field and are having devastating impacts.

**The rule MoIP is pursuing is different than the Noxious Weed Law in this significant way: the rule would cease the propagation, sale, and intentional distribution of invasive plants in Missouri, but it would not penalize property owners for the presence of a known invasive plant.**

In an effort to stop invasive plant problems before they start, MoIP is proposing a new rule prohibiting the sale, intentional distribution, and propagation of any living part of a known invasive plant. Many states, including Indiana, Ohio, and Maryland have recently passed rules of this nature, for the benefit of agricultural, horticultural, silvicultural, and other interests of their states.

*Above: In 2018, the Missouri Invasive Plant Task Force (MoIP) organized a field event in Columbia, MO to call attention to the invasive nature of Callery pear (Pyrus calleryana; Bradford pear and other cultivars), which is readily available for purchase from many outlets.*
Photo credit: Missouri Dept. of Conservation.

***Continued on page 4***

Many Missourians are familiar with the state Noxious Weed Law, which both requires property owners to control noxious weeds on their property and prohibits noxious weeds from being sold. Violation of either of these provisions is subject to penalty by county prosecutor. The state designates 12 species of weeds as noxious. Currently, adding a plant to the Noxious Weed Law list requires review and approval by the Missouri Department of Agriculture.

To create a new designation of plants that are banned from sale (but neither penalizes property owners for presence of invasive plants, nor requires them to treat or remove those invasive plants) would require changing statutes through the legislative process. For example, Indiana and Ohio recently enacted new state rules for invasive plants that are separate from their Noxious Weed Laws

*The Missouri Invasive Plant Task Force (MoIP) defines "invasive" as an aggressive, non-native plant whose presence causes or is likely to cause economic harm, environmental harm, or harm to human health. For example, burning bush (Euonymous elatus), pictured above, is spreading beyond developed areas where it has been planted and is invading many wild areas in Missouri, including this lower Ozarks woodland. Burning bush is widely available for sale.*
Photo credit: Susan Farrington

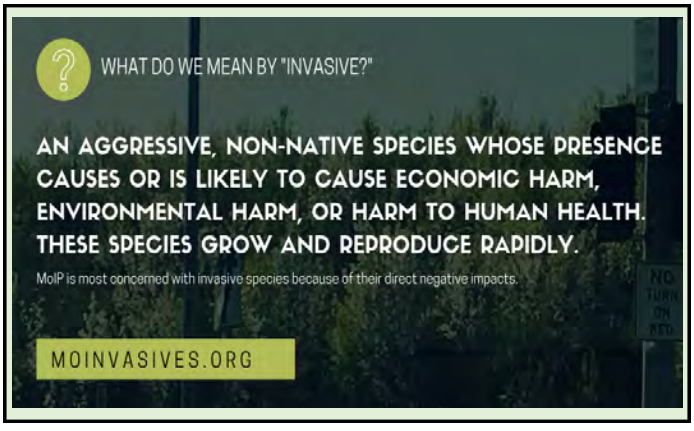
The rule MoIP is pursuing is different than the Noxious Weed Law in this significant way: the rule would cease the propagation, sale, and intentional distribution of invasive plants in our state, but it would not penalize property owners for the presence of a known invasive plant. This proposed rule would be complementary to—not a replacement or alteration of—the Noxious Weed Law.

**Esatblishing a "Cease the Sale" Statute & Enforcement**

After obtaining rigorous stakeholder review, MoIP intends to work with the Missouri Department of Agriculture—which is a MoIP stakeholder—and state lawmakers to establish statute language, the proper jurisdiction for legal authority, and penalties. While some exceptions will be necessary, such as transferring invasive plants for research purposes, statute language will state that a person may not intentionally propagate, import, transfer, sell, purchase, or introduce any viable part of an invasive plant in the state. These restrictions do not apply to the transfer, lease, sale, or purchase of real property on which an invasive plant is already established. MoIP is also exploring options for possible declassification protocols.

Some plants, particularly in the ornamental trade, require multi-year upfront investment before selling to the public. Interested stakeholder groups are invited to recommend a "phase out" period of time during which existing stock of certain invasive plant species may still be legally sold after the rule is passed. MoIP will provide lists of alternative native and non-invasive non-native plants with which to replace restricted invasive plants in commerce.

If you belong to an agroforestry or other group that would like to review MoIP's ranked assessment of invasive plants to be considered under a new Missouri Cease the Sale rule, please contact Tina Casagrand at info@moinvasives.org.




*Carol Davit* is the executive director of the Missouri Prairie Foundation and chair of the Missouri Invasive Plant Take Force. *Tina Casagrand* is an independent contractor who coordinates MoIP's work.

## Species Spotlight: Serviceberry *(Amelanchier* spp.*)*

*Hannah Hemmelgarn, Center for Agroforestry*

Juneberry, serviceberry, shadbush, saskatoon; no matter what name you ascribe to this small tree or large shrub, *Amelanchier* (many species, most commonly *arborea* in Missouri) is well loved by both humans and wildlife. This deciduous, early-flowering woody perennial typically reaches 15-25 ft. tall, with blooms March through early May. As their names suggest, flowering time is often associated with ground thaw, when a burial service (thus, serviceberry), would be feasible, and fruits are ripe for picking in June (Juneberry). In the Rosaceae family, their five-petaled fragrant white flower clusters are a treat to encounter in early spring, whether in the understory of a healthy forest, or as a native addition to a farm, garden, or urban landscape.

*Above: Early spring flowers are an attractive landscape feature.* Photo credit: Hannah Hemmelgarn

Currently underutilized as a specialty crop, *Amelanchier* is a promising perennial crop in agroforestry systems for a number of reasons. Unlike elderberry and many other berry shrubs commonly grown for human consumption (e.g. blackberries, raspberries etc.), serviceberries are not likely hosts for the spotted winged drosophila fly, since their mature fruits precede SWD arrival. Hardy in zones 4-9, the shrub-like tree is well suited to climate variability in the Midwest. Juneberries, which grow in palm-sized clusters, are sweet and delicious fresh or processed, similar in size to a blueberry, with more complex cherry-like flavors. Since the seeds within the berry are very small, the fruit can be consumed in juicy handfuls without additional processing needed. However, a pie or preserve made from the berries is a wonderful way to add value and appeal. As a landscape planting, Serviceberry's finely toothed obovate leaves also offer beautiful fall color as a seasonal complement to early spring flowers.

*Above: Clusters of berries are attractive to birds and other wildlife. P*hoto credit: Gardenia Garden Design

The greatest challenge for maximum berry harvest is competition with birds, who also enjoy their sweet fruits. Noisemakers and scarecrow figures can reduce this pressure, as can inter-planting and a timely harvest. Entomosporium leaf spot (fungal) has also been known to affect *Amelanchier* in particularly wet years, although has not been shown to substantially impact yields. As the plant becomes more popular, the bottleneck for cultivation may simply be quantity of cultivar planting stock. Look for cultivars that have been selected for large, sweet fruit and disease resistance, including Pembina, Smokey, Parkhill, Autumn Brilliance, Robin Hill, Ballerina, Prince Charles, Honeywood, Regent, and Princess Diana.

*Above: Fall color adds additional appeal.*
Photo credit: Nebraska Forest Service

**Further resources on Amelanchier for wildlife, landscaping, and cultivation:**


- Dirr, M. (1998). *Manual of Woody Landscape Plants*, 5th edition. Stipes Publishing L.L.C., Champaign, IL. 1250 pp.
- Hodde, M. (2017). Juneberries. Cornell Cooperative Extension, Seneca County. http://senecacountycce.org/agriculture/juneberries
- Kaiser, C. & M. Ernst (2017). Juneberries. CCD-CP-11. Lexington, KY: Center for Crop Diversification, University of Kentucky College of Agriculture, Food and Environment. http://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/juneberry.pdf
- Reich, L. (2004). *Uncommon Fruits for Every Garden*. Timber Press, Portland, OR. 308 pp.

# Hosts with the Most

Our beloved birds—like cardinals, chickadees, orioles, bluebirds, and so many more—must feed their babies insects and other invertebrates. For example, to raise one nest of chickadee babies, parents must forage up to 9,000 caterpillars to feed them (Brewer 1961).

What nourishes caterpillars? Native plants! Caterpillars of native insects depend on native host plant foliage as their food sources—and these plants flourish despite the munching.

**Parent songbirds must find nutritious caterpillars—like this polyphemus moth caterpillar feeding on the leaves of oak—to feed their baby birds.**

**Choose Native Plants.**
**Find natives for the lower Midwest from Grow Native! professional members. See www.grownative.org for resources.**

**Remember:**

- Pesticides—including those sprayed on plants—can be harmful to insects and the baby birds that eat insects.
- When you shop for natives, chose true native species. Cultivars may not provide the full range of ecological benefits that natives do.

**Native host plants on your property = insects, their caterpillars, and songbirds.**

The native trees and perennials listed below are "hosts with the most." Their leaves provide food for many different kinds of insect caterpillars. The more native insects your property supports, the more songbirds and other cherished wildlife you can help.

| WOODY PLANTS | No. of species of butterfly & moth caterpillars supported |
|---|---|
| **Oak** (genus *Quercus*) | 557 |
| **Black cherry** (genus *Prunus*) | 456 |
| **Willow** (genus *Salix*) | 455 |
| **Birch** (genus *Betula*) | 413 |
| **Crabapple** (genus *Malus*) | 311 |
| **Blueberry** (genus *Vaccinium*) | 288 |
| **Maple** (genus *Acer*) | 285 |
| **Elm** (genus *Ulmus*) | 213 |
| **Pine** (genus *Pinus*) | 203 |
| **Hickory** (genus *Carya*) | 200 |
| **Hawthorn** (genus *Crataegus*) | 159 |
| **Alder** (genus *Alnus*) | 156 |
| **Basswood** (genus *Tilia*) | 150 |
| **Ash** (genus *Fraxinus*)* | 150 |
| **Rose** (genus *Rosa*) | 139 |
| **Filbert** (genus *Corylus*) | 131 |
| **Walnut** (genus *Juglans*) | 130 |
| **Beech** (genus *Fagus*) | 126 |
| **Chestnut** (genus *Castanea*) | 125 |

Chart data from Tallamy et al are national in scope.
* Ash species are impacted by the emerald ash borer.

| PERENNIAL PLANTS | No. of species of butterfly & moth caterpillars supported |
|---|---|
| **Goldenrod** (genus *Solidago*) | 115 |
| **Aster** (genus *Symphyotrichum* [*Aster*]) | 112 |
| **Sunflower** (genus *Helianthus*) | 73 |
| **Joe Pye, Boneset** (genus *Eupatorium*)* | 42 |
| **Morning Glory** (genus *Ipomoea*) | 39 |
| **Sedge** (genus *Carex*) | 36 |
| **Honeysuckle** (native species of genus *Lonicera*) | 36 |
| **Violet** (genus *Viola*) | 29 |
| **Geranium** (genus *Geranium*) | 23 |
| **Black-eyed Susan** (genus *Rudbeckia*) | 17 |
| **Iris** (genus *Iris*) | 17 |
| **Evening Primrose** (genus *Oenothera*) | 16 |
| **Milkweed** (genus *Asclepias*) | 12 |
| **Verbena** (genus *Verbena*) | 11 |
| **Beardtongue** (genus *Penstemon*) | 8 |
| **Phlox** (genus *Phlox*) | 8 |
| **Bee Balm** (genus *Monarda*) | 7 |
| **Little Bluestem** (genus *Schizachyrium*) | 6 |
| **Cardinal Flower** (genus *Lobelia*) | 4 |

Chart data from Tallamy et al are national in scope.
*Joe Pye is now in the genus *Eutrochium*

Missouri Environmental Education Association
care - understand - act

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www.grownative.org
Keeping Nature Near

# Plant an Oak!
## (But not a Pin Oak)

**Our great state of Missouri is the native home to a diversity of native oak species adapted to a variety of site conditions - from the rocky hilltops of the Ozarks, to the rich soils of the valleys, and the fertile basins of our wonderful rivers and streams.**

### Why NOT a Pin Oak, a Missouri native species?

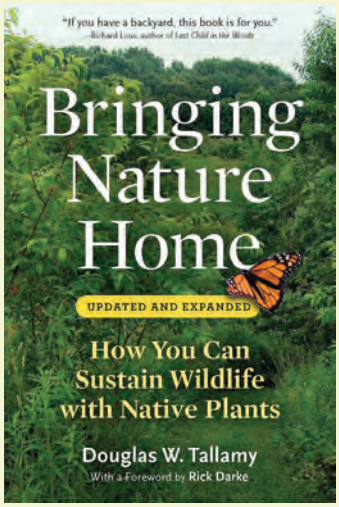
While pin oaks thrive and prosper in their bottomlands, trees planted in alkaline (high calcium) soils develop iron chlorosis, which leads to poor health and yellow to yellowish-green foliage – a common condition exhibited on prairie soils and at many of our urban and suburban landscapes containing significant deposits of crushed limestone remaining from construction site activities.

### Choose the RIGHT tree for the RIGHT place.

Choose the RIGHT tree
for the RIGHT place.
With our native oaks, there are alternate species to choose which are better adapted to the challenging conditions of urban and suburban sites with significantly disturbed soils – high clay content and high soil PH (alkaline) – along with the rigors of our diverse climatic environment.

Created by
**The Midwest Tree Whisperer**
*a friend of our local urban trees, in association with Grow Native*

*Continued on page 8*




*Beyond the beauty and summer shade comfort offered by our majestic oaks, the entire oak genus (Quercus) offers significant life support for a diversity of vertebrate and invertebrate wildlife species. Aiding in the creation of an essential food source for baby birds, the oak group supports over 500 species of moth and butterfly caterpillars – baby birds eat caterpillars, worms and insects, not bird seed.*

For more, refer to the book *Bringing Nature Home* by Douglas W. Tallamy and visit www.BringingNatureHome.net.

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# Top oak choices for Missouri landscapes

## White Oak Group

- **Swamp White Oak** *(Quercus bicolor)* – although growing in low, wet areas in the wild, this long-lived (up to 350 years!) oak species can withstand drought conditions once established. Tolerant of diverse landscape site conditions.
  **Acorn volume:** medium **Acorn size:** medium
- **Overcup Oak** *(Quercus lyrata)* – another oak native to flooded sites, this species can tolerate somewhat drier conditions. An excellent shade tree for low-lying areas.
  **Acorn volume:** low **Acorn size:** medium
- **Swamp Chestnut Oak** *(Quercus michauxii)* – Another attractive shade tree for low-lying sites adaptable to a variety of landscape conditions. Fall foliage color is an outstanding red. Highly deserving of great use in the landscape as a large shade tree.
  **Acorn volume:** low/medium **Acorn size:** large
- **Chinkapin Oak** *(Quercus muehlenbergii)* – occurring naturally in alkaline, rocky soils, this long-lived oak species is highly adapted to urban and suburban site conditions. Forms an attractive shade tree and relatively resistant to insects and disease.
  **Acorn volume:** medium **Acorn size:** small

## Red Oak Group

- **Cherrybark Oak** *(Quercus pagoda)* – a relatively fast growing oak, native to bottomland sites growing with tulip tree, shellbark hickory, Shumard oak, swamp chestnut oak, red mulberry and red buckeye. Quite adaptable to urban and suburban site conditions.
- **Acorn volume:** low **Acorn size:** small
- **Northern Red Oak** *(Quercus rubra)* – a long-lived, fast growing species first introduced to cultivation in the late 1600's. Found growing naturally throughout the state of Missouri growing in well-drained soils of moist ravines, north and east facing slopes, and on slopes at the base of bluffs.
  **Acorn volume:** medium **Acorn size:** large
- **Nuttall Oak** *(Quercus texana)* – grows naturally on poorly drained clay flats and floodplains. Quite similar in appearance to the Pin Oak but much more adaptable to varied soil conditions of Missouri and exhibits a better branching habit.
  **Acorn volume:** low/medium **Acorn size:** medium
- **Shumard Oak** *(Quercus shumardii)* – a moderately fast growing, long-lived tree highly adaptable to sites ranging from wet to dry. One of the first oaks to turn color in the autumn with vibrant red tones.
- **Acorn volume:** medium **Acorn size:** large

For more information about native oaks and other excellent native tree choices for your landscape:

www.grownative.org

Special thanks to the following individuals for their generous sharing of knowledge to assist content development and editing of this educational brochure: **Carol Davit,** *Missouri Prairie Foundation/ Grow Native!;* **Wayne Lovelace,** *Forrest Keeling Nursery;* **Bill Spradley,** *Trees, Forests and Landscapes;* **Guy Sternberg,** *Starhill Forest Arboretum;* **Douglas Tallamy,** *University of Delaware;* **Robert Weaver,** *The Gateway Gardener Magazine.*

**NOTE:** In the spirit of planting for diversity, many other highly beneficial tree genera, beyond oaks, should be considered for thriving in the conditions of your landscape site. However, oaks form the foundation of our strong and long-lived urban forest and deserve priority consideration when planning for shade trees for your landscape.

# A Step-by-Step Guide to Tree Panting

You've taken the first step towards greening your community! It's up to you to promote your trees long-term health, resiliency and survivability!

## 1 Dig a Hole

The hole should be at least twice as wide and the same depth as the root ball. Tip: Lay your shovel across the hole. The shovel should lay flat across the root ball and ground.

## 2 Cut the Roots

Cut any roots that are circling the root ball and loosen up the soil.
If left alone, roots will continue to grow in a circle and eventually kill the tree.

## 3 Fill the Hole up!

Use the same soil you dug out of the hole to fill the hole back up.
Do not stomp or tamp the soil too tight.

## 4 Water the Tree

Trees MUST be watered after planting.
A long soaking with a hose is best.
Give your tree 5 gallons of water each week for its first 3 years if there is limited rainfall.

Forest ReLeaf of Missouri
25 Years & Growing

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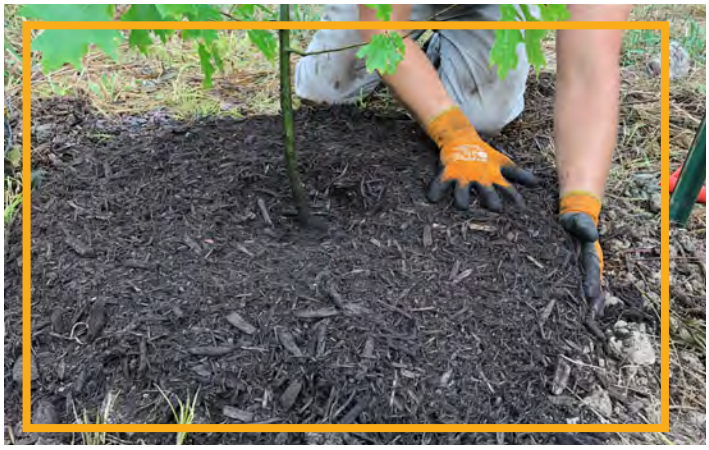


## 5 Mulch

Mulching reduces weeds and grass, retains moisture, and protects from lawnmowers.
Mulch a ring about the size of the hole, no more than 3" deep.
Do not pile mulch against the trunk as this will encourage fungal growth.
The mulch ring should look like a "donut" with the trunk growing in the middle.

## 6 Maintenance

### Pruning

- Prune only dead/broken branches for the first year after the tree was planted.
- Additional pruning may stress the tree.
- For future pruning, consult a professional.

### Staking

- Stake trees only when necessary such as in very windy areas.
- Remove all staking after one year.

### Long Term Maintenance

- Visit your tree regularly to water, weed, mulch, prune, and check for problems.

## Tree Planting Tips

### Call before you dig:

DIG RITE:1-800-344-7483 (Missouri)
J.U.L.I.E.: 1-800-892-0123 (Illinois)
811 (Kansas)

### Get Permission:

Consult the your municipality's forestry/ public works department or the property owner before planting.

### Transporting:

Always cover trees exposed to the elements to prevent windburn and leaf loss.
Always carry trees by the pot to prevent damage to the roots.
Do not leave trees covered in a vehicle for extended periods of time.
Keep roots moist until planting.

**Incorrect** **Correct**

### Get to Know Your Tree

Read the tree tag to learn about the species and whether the tree can be planted under or near utility lines.

### Plot Your Trees

Help Missouri plant (and plot!) one million trees! Head over to www.plantmotrees.org to add your trees and track their growth.

**Read on for more info about trees!**

*Continued on page 11*

# Benefits of Trees

In the U.S., trees prevent
**$7 Billion**
in health costs annually!

**Trees can cut air conditioning costs by up to 30%!**

One acre of forest absorbs
**6 Tons**
of carbon dioxoide and puts out
**4 Tons**
of oxygen

**Trees cool city streets by up to 10 degrees**

Nationally, there are
**60 Million**
street trees with an
average value of **$525**
per tree

**Trees add an average of 10% to a property's value**

A mature tree can capture
**1,385 Gallons**
of stormwater each year

**and so much more!**

Source: Arbor Day Foundation

# About Forest ReLeaf

Forest ReLeaf of Missouri operates CommuniTree Gardens, the only nonprofit community-assisted nursery in the region. Since our inception in 1993, over 200,000 trees have been planted.

Projects have:
- Increased tree canopy in low-income areas.
- Assisted with reforestation after natural disasters or in response to invasive pests.
- Promoted peace and healing in our communities.

**Programs:**
Project CommuniTree makes native species trees available for FREE for planting on public or nonprofit owned land. Apply at moreleaf.org/plant

Priority ReLeaf provides larger trees, at no cost, to underserved and disaster-affected areas.

ReLeaf Fundraising offers trees for private land for a suggested donation.

**Volunteer!**
None of this would be possible without our dedicated volunteers at CommuniTree Gardens, and across the region.
Join us at moreleaf.org/volunteer

## Major Support Provided By:

Saint Louis COUNTY PARKS

Conservation Department Missouri

**and people like you!**
**Visit moreleaf.org/give**
**to help sustain Forest ReLeaf**

# Timber Price Speculations amid COVID-19

*Lynn Barnickol*

We live in unprecedented times; local and global economies are reacting to the COVID-19 pandemic, with many folks out of work and investment revenues down. This serves as a reminder that China is not the dominant buyer of US wood as in the past. Demand for US wood is now primarily from other countries whose demand is not otherwise strong or whose infrastructure is lacking. Notably, demand for other products has eroded the grade lumber portion of the hardwood market for flooring and cabinetry, and this year's wet winter and spring has limited logging.

Missouri forests are dominated by white and red oaks, with other species in far lower volumes. Oaks account for approximately 56% of the hardwood species sawtimber volume in our timberland. Missouri's wood industry, at least in the Ozarks, primarily depends on oaks.

These circumstances combined with an erratic fuel market means speculation about ongoing and future timber purchases is to be expected. This is a good time to ask your forester and potential timber buyers about trends and predictions they see in the market. In an attempt to describe current timber and lumber markets in Missouri, the following reports from consulting foresters located throughout the state are shared here. Reports and recommendations range from "hold on to your trees" to "yes, timber is still being marked, purchased, and harvested." White oak for barrel staves and walnut lumber and veneer appear to remain promising.

Foresters may see no bids on some timber sales but still receive good bids on another sale. Walnut seems to be a species in sustained high demand, but in the spring when the bark slips, we may see the predictable seasonal dip in bid prices. White oak stave quality timber continues to be strong. One forester reported, "Timber sales having a high percentage, say 75 percent or more in white oak, will likely sell for a good price." A second forester reported, "A timber sale in Crawford County, on 79 acres, with 75 percent in good quality red oak may not sell." Generally, timber sales may attract bidders, but few are placing bids, or they may bid lower than anticipated.

Why the instability? The price a mill can afford to pay for logs is not stable. When dealing in timber of red oak species where various grades of lumber are sawed, the flooring grades, typically 1 common, 2 common and 3A common are difficult for mills to sell. Domestic demand is weak as consumers consider a variety of do-it-your-self flooring products such as tile, stone, or vinyl. Cabinetry makers are using different finishes that require a less obvious figure, resulting in less demand for red oak. Foresters reported that more than one hardwood flooring plant has suspended operations. Meanwhile, pallet lumber is becoming difficult to sell. Railroad ties are in demand but there is speculation about price stability. One forester shared "The tie buyers may source from their most loyal mills while others are put on a quota system, where limited ties are purchased. However, upper grades of red oak lumber such as FAS, FAS – 1 Face, and some 1 Common are being sold." Success in getting stable prices for their lumber appears to depend on the availability of high-grade lumber sawed, and on the marketing ability of sales staff or the sawmill owner to reach domestic and foreign clients in a sluggish supply chain.

*Photo credit: Hank Stelzer*

***Continued on page 13***

Some loggers have been put on quota, meaning they are only allowed to deliver a limited number of loads of logs to mills. When you or your forester request bids, there may be interest but not many bids received. Several foresters reported, "Red oak volume kills the price, but there is decent demand for white oak stave quality logs." Another commented that "my logger wants a two-year contract in hopes prices may come back or stabilize." Others shared that "even my loggers are saying it's not the best time to sell timber."
Still, markets and timber sale conditions are constantly in flux. While a timber sale in Crawford County with 75 percent of quality red oak was reported to be tentative, the forester recently reported, "Eight folks looked at the sale. When bids were opened there were six bids, the two close bids at the top were both mill owners. The difference between the top bid and bottom bid was $33,000." The two mill owners likely had an order in hand, contradicting the declining red oak market observation.

Not unlike other times, timber bidding is fluid and dynamic. As a rule of thumb, if you do not need the revenue or there is no definite need to salvage timber, wait for better economic conditions. While there have been previous times of uncertainty, wood is used in many applications worldwide, giving the resource an important economic staying power.

*Thank you to the consulting foresters who contributed information.*

## The Bid Box

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

Rare as it is, there are times when a landowner may receive only one bid on their timber. This is why retaining a professional forester is critically important; not only to provide you with a good estimate on the value of your timber, but also to give you sound advice, if in fact you receive a single bid.

Moniteau County

- 70 acres
- 364 marked trees
- Estimated total volume 62,810 bd ft (Doyle Scale)
    - About 50% of volume was white oak group species, the rest was a mix of various other hardwoods, both upland and bottomland species
    - Timber quality lower than average, a few upland areas had been used for livestock grazing in the past, but the sale did have a small amount of stave-quality material.
- Forester estimated the value at $12,500
- A single bid of $12,610 was received which the landowner accepted
- Return: $180/ac

The buyer was local; someone the forester has worked with for several years did great work. A combination of lower quality timber and wet weather with many loggers behind in harvesting contracts in-hand might have resulted in the low bidder turnout. Still, both the landowner and the forester felt it was a good deal given the circumstances.

Whether a sale brings one bid or ten, check out the following MU Guides to help you become familiar with some of the aspects of selling timber:

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 will help you help your professional forester!

# Want to save your ash tree from EAB?

*Robbie Doerhoff, MDC Forest Entomologist*

Emerald ash borer (EAB) is becoming more widespread in Missouri with 78 counties known to have this tree-killing pest. If you have a live ash tree in your yard and you'd like to see it stay that way, now is the time to treat it with an insecticide.
What insecticide should you use? That's a great question! Not all products will protect your tree from EAB, so it's important to understand your options when it comes to this pest. Check out MDC's EAB Management Guide for Missouri Homeowners for a list of insecticides recommended by EAB experts.

In addition to brushing up on insecticides, follow these steps when considering ash treatments:

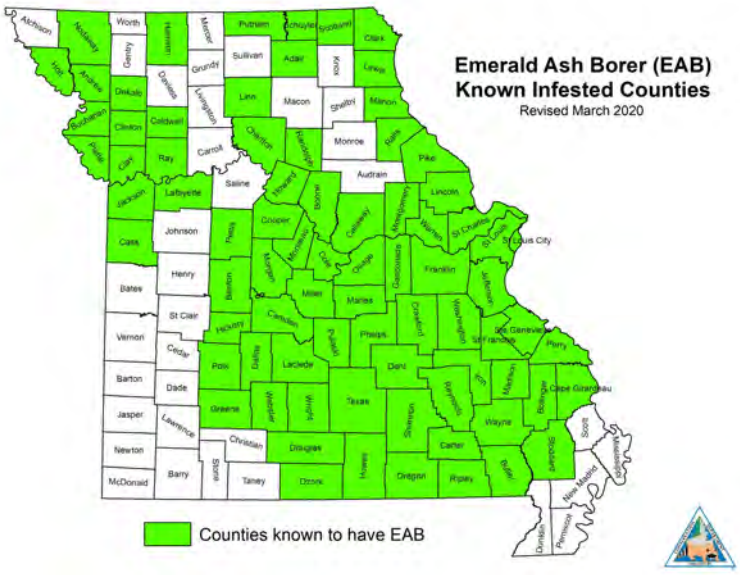
1. Make sure your tree is an ash! Learn to identify ash trees in this MDC video: https://www.youtube.com/watch?v=D_ZnTisLnwE

2. Check the health of your tree. Look for dead branches, sprouts growing from the trunk, and woodpecker damage. If more than 50% of the tree's canopy is dead, it likely can't be saved.

3. Measure your tree at chest height. If the diameter is 20 inches or less, you can treat the tree yourself using a soil drench insecticide purchased online or at your local garden center. If the tree is larger than 20 inches in diameter (63 inches in circumference), it needs to be treated by a professional arborist. Visit www.treesaregood.org for a list of certified arborists in your area.

4. It's time to treat! The best time for homeowners to apply EAB treatments is during the spring as ash trees are leafing out. Waiting until later in the growing season can lead to slower uptake by the tree and less protection from EAB.

**When using insecticides, make sure you read the label thoroughly and apply the product according to the directions. Most soil drench products for EAB are intended as a single, annual application in the spring; applying the product more than once a year can put pollinators and other non-target insects at risk of exposure. Avoid applying soil drench products within the root zone of flowering plants, when soils are waterlogged, or right before a large rain event.**




*Above: Updated map of EAB infestations in Missouri. This pest has been spreading to more counties since first recorded in the state.*

Unfortunately, ash trees in forests across Missouri will soon be dead as EAB continues its march across the state. Landowners often notice woodpecker damage on their ash during the winter months. This is typically the first sign of EAB in an area and is an indication that most of the ash will be dead within a couple years. EAB-killed ash trees are very brittle and dangerous, so be extremely cautious when cutting firewood or working near them. Young ash trees (under 10 inches in diameter) are likely to escape the initial wave of EAB attack and may need to be managed, depending on the landowner's forest management goals.

For questions related to EAB, ash tree treatments, or managing ash in forests, send an email to forest.health@mdc.mo.gov or call MDC's Forest Entomologist, Robbie Doerhoff, at (573)815-7901, extension 2906.

For MDC's EAB Management Guide for Missouri Homeowners, visit short.mdc.mo.gov/ZSq.

# editorial board



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Missouri Consulting Foresters Association

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green horizons

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The Center for Agroforestry
University of Missouri
*A Global Center for Agroforestry, Entrepreneurship and the Environment*

# Calendar of Events

### Biochar from the Forest to the Farm

*May 21, 2020 | 12:00pm CST | USDA Forest Service | online webinar*

This webinar is the third presentation in an 11-part monthly webinar series on biochar production. In this seminar, Jim Archuleta, USDA FS-R6 Regional Wood Innovations Coordinator will discuss agricultural uses for biochar, including animal bedding, irrigated lands, high value crops, and improving forest soil; and will describe a case study of biochar produced at a northern California biomass powerplant that serves as a valuable input for creating compost. More information and registration for this event can be found at http://www.forestrywebinars.net/webinars/biochar_forest_farm.

### Chestnut Lunch Webinar Series:

*May 27, 2020 | 11:00-12:00pm CST | Michigan State University Extension | Free online webinar*

This webinar series will assist chestnut growers with real-time updates in-season. Join MSU faculty and veteran chestnut growers on the last Wednesday of each month April-August to learn about best agronomic practices, pest management, fertility and more. The May webinar will feature Matthew Grieshop of Michigan State University Extension, on radial airblast sprayer optimization for chestnuts. This series is free, but registration is required: Chestnut Lunch Webinar Series. Recorded webinars will be closed captioned and available within seven days of the live event. https://www.canr.msu.edu/news/chestnut-lunchtime-webinar-series

### Returning Livestock to Pasture: Regenerative Agriculture "Lunch and Learn"

*May 28, 2020 | 12:30-1:00pm CST | Iowa Farmers Union | online workshop*

Join Seth Watkins in this final webinar of the Regenerative Agriculture Lunch and Learn series. Seth will outline how to successfully integrate livestock into regenerative agriculture practices on your farm. Watkins is a row crop and cow-calf livestock farmer in Clarinda, Iowa. Register here: https://www.organicconsumers.org/news/join-regenerative-agriculture-lunch-and-learn-webinar-series.

### Managing Your Woodlands with Prescribed Fire

*May 28, 2020 | 12:00pm CST | North Carolina State Extension Forestry | free online webinar*

Prescribed fire is a forest management tool for wildfire risk reduction, wildlife management, and many other purposes. The presenters in this Woodland Owner Lunch and Learn will address considerations related to prescribed burning such as benefits and uses, liability and risk, and technical and financial assistance. This information will be most useful for landowners who are considering or are currently using prescribed fire on their land. Training resources available to landowners will also be discussed. More information and registration at http://www.forestrywebinars.net/webinars/managing-your-woodlands-with-prescribed-fire.

### Glades, Quail, and Prescribed Fire Workshop

*June 2-3, 2020 | Oak Woodlands & Forest Fire Consortium | Ash Flat, Arkansas*

Co-hosted by the Oak Woodlands & Fire Consortium, Arkansas Game and Fish Commission, and The Nature Conservancy, this 1.5-day workshop in Northern Arkansas will focus on prescribed fire management of glades, with emphasis on quail habitat. A half day of presentations at Ozarka College will be followed by a full day field tour to see these practices at Harold E. Alexander Spring River Wildlife Management Area. Registration is required and limited to the first 50 registrants. For details, visit https://oakfirescience.com/events/glades-quail-and-prescribed-fire-workshop-in-arkansas/ or contact Joe Marschall (marschallj@missouri.edu) with questions.