

# green horizons

Growing tomorrow's future today.

September 2014

A newsletter from the Center for Agroforestry in  
conjunction with the Forest and Woodland Association of Missouri

Volume 18 • Number 3  
Mike Gold, Mark Coggeshall and Savannah Kannberg,  
editors

## AGROFORESTRY

# The Bucks Unlimited Oak™ Way



Photo by Kyle Spradley

The Buck's Unlimited Oaks were developed at the Horticulture and Agroforestry Research Center in New Franklin, Mo. They produce heavy annual swamp white oak acorn crops by age six.

By SCOTT BRUNDAGE, GENE GARRETT,  
MARK COGGESHALL, KIM YOUNG

Gene Garrett, retired Director of the Center for Agroforestry at the University of Missouri, talks of seeing newly planted seedbeds of swamp white oak acorns, dug out and eaten by deer the first night after planting. John Burk, wildlife biologist at the National Wild Turkey Federation, and an avid Missouri deer hunter, said that many times he has seen deer walk through a carpet of white oak acorns without eating them to get to swamp white oak acorns nearby. The late Bill Yoder, former nursery manager at the Mo. Department of Conservation's State Tree Nursery in Licking, Mo., once stated that if a "mesh cover" was not immediately placed over newly planted swamp white oak acorns, the majority would be dug up and eaten by deer, while acorns of other species went untouched. Many stories are told about deer seemingly preferring swamp white oak acorns over acorns from other species.

Since 1998, UMCA has studied swamp white oak acorn production. What began as a study of eight carefully selected half-sib (same mother, different father trees) swamp white oak trees has led to a grafted acorn production orchard, consisting of multiple replications of the four best acorn producers from the original eight trees. The four have shown excellent growth rates along with early and consistent annual acorn production. The trees release their acorns over several weeks, from late September into late October and early November, which is of special importance to bow hunters. These characteristics have also been observed in the seedlings produced from the grafted orchard trees.

From these research findings, UMCA announces the introduction of the new "Bucks Unlimited Oak™." These are premium quality, fast growing swamp white oak seedlings that produce acorns at a very young age. Studies have demonstrated that limited flowering and fruiting can begin on these seedling trees by age 4. Of even greater significance, 75 percent of the seedling trees produce acorns

Continued on page nine >

## In this issue

Forest Management	2, 3
Urban Forestry	7
Forest Pest Update	7
Agroforestry	4, 9
Forest Industry	5

**FOREST MANAGEMENT**

# Make plans now for planting trees next spring

By HANK STELZER

Most forest landowners think about planting trees in the spring. Like planning your summer garden in the dead of winter, fall is the prime time to prepare planting sites and place seedling orders to be ready for spring.

**Preparing Your Planting Site**

Every spring, foresters usually get a call from a landowner: “I just finished planting seedlings. What herbicide can I use to kill the weeds?”

Weed management in new tree plantings begins with proper site preparation the fall before planting. The objective is to provide new seedlings with a three- to five-foot vegetation-free area. This weed-free zone can either be a strip or circle. If planting in perennial sod (like fescue), the most effective way to kill existing vegetation is with a contact herbicide. Fall applications will provide more consistent control than spring. An added benefit is that your planting rows, or spots, will already be “marked” come planting time.

Chemical control can be improved by mowing the area to eliminate existing foliage and treating the tender (and more susceptible) re-growth.

Glyphosate (e.g., Roundup, Touchdown, among others) is the most effective contact herbicide for perennial sods. The recommended rate is dependent upon the type of vegetation (fescue, brome, bluegrass, etc.) and the particular formulation of the herbicide you apply. For tall

fescue, the recommended Roundup rate is two quarts per treated acre. Remember that a treated acre is always smaller than an actual acre, because only the area around the trees is treated. For example, planting trees on a 10’x10’ spacing is 435 trees per acre. If the plan is to prepare a 4’-diameter circle around each tree, then the treated area is 1/8 acre [ $3.14(2 \text{ ft})^2 = 12.56 \text{ sq ft}$ ; 12.56 sq ft per tree (435 trees per acre) = 5,464 sq ft].



*Photo courtesy of Hank Stelzer*

Start preparing to manage weeds in fall to ensure easier spring of planting seedlings.

Always read the herbicide label at least twice: once before purchasing the product and again before application. Crop Management Data Systems (CDMS) provides an online service for downloading the latest product label. Head to [www.cdms.net](http://www.cdms.net), find the “Services” tab on the top menu bar, and then click on “Labels/MSDS” from the drop-down menu. On that page, type in either the chemical name of the active ingredient or the product name to locate the product label, in the search bar.

I recommend adding a second

herbicide containing sulfometuron (e.g., Oust XP) alongside glyphosate to take care of any late-season grasses and broadleaf weeds. Sulfometuron has both pre- and post-emergent activity. As with glyphosate, carefully read the label as rates do vary depending upon where you live and what species you intend to plant. In the Midwest, the Oust XP label will allow fall application rates of three to five ounces of product per treated acre on sites where northern red oak, white oak, ash (green or white), sweetgum or yellow-poplar are to be planted. These rates also provide some pre-emergent control the following spring.

Sometimes weed control in new plantings cannot be started until the spring of the planting year. If started early, before weeds show substantial growth, an application of a soil-applied herbicide at least two weeks before planting might help. But

spring weather conditions are usually dicey at best and the risk of damaging actively growing roots of freshly planted seedlings is high if herbicide is not correctly applied.

Many people think that mowing is a form of weed control when in fact, it is not. It actually stimulates grass and weed growth that competes with new tree seedlings for water and nutrients.

Another fallacy is that a one-time chemical application is enough. Research has shown that it takes at least three years of active weed control to ensure success. It usually takes two

Continued on page three >



## Planning early to plant trees starts now

From page two

herbicide applications the first year: one to prepare the site and another around two months after spring planting. The second application is necessary because most herbicides lose their effectiveness around 45 to 60 days after application. Weeds grow all summer long, making the second application very important.

In subsequent years, weeds most likely will be controlled with just one application at the start of the growing season. The exception to this 'rule' is situations where the weed pressure is very high, then a second application will be needed.

### Which trees grow well in my area?

More than 160 tree species call Missouri home. Regardless of where a tree is planted, provenance is of paramount importance in selecting plant material for a planting site. Trees grow best when seed or seedlings are from a local source.

Soils and climate create four broad tree-growing areas in the state that should be considered when selecting species. However, within each major area many varying sites must be considered individually for species selection.

The Ozark area has the greatest diversity of tree and shrub species in Missouri and can be used to grow trees for wildlife and commercial forest products, but the soils are often thin and rocky with varying fertility levels. Desirable species typically found on the better sites include scarlet, northern red, Shumard, black and white oak. In the eastern Ozarks, cherrybark oak, sweetgum and tulip poplar are common. Shrub species include flowering dogwood, aromatic



*Photo courtesy of Mark Coggeshall*

This photo shows a 26 year old seed source study of white oak planted in southern Indiana. The two large trees on the left are from Mississippi, while the two smaller trees to the right (circled) are from Wisconsin.

wetter ground, common species include cottonwood, silver maple, hackberry, sycamore and green ash. On higher ground: pecan, pin oak, black walnut, swamp white oak, northern red oak, and persimmon.

The Southeast Lowlands area has deep river deposited soil and Crowley's Ridge, a very hilly area of deep, rich soils. Nearly all of this area was once forested. Species include baldcypress, hackberry, cottonwood, silver maple, sycamore, pin oak, willow oak, overcup oak, sweetgum, and green ash. On higher ground: tulip poplar, white ash, American beech and a variety of hickory species are common.

The soils and climate conditions of Northern and Western Prairie areas are not as favorable to tree growth. Site and species selection are very important, and after-planting care needs special emphasis. Common species in the uplands include bur, white, swamp white, Shumard, black and northern red oaks, among others.

## Purchasing Trees

### Missouri

George O. White Nursery  
Mo. Department of Conservation  
Licking, Mo.

573.674.3229

[www.mdc.mo.gov/forest/nursery/](http://www.mdc.mo.gov/forest/nursery/)

Ripley County Farms  
Doniphan, Mo.

573.996.3449

[www.ripleycountyfarms.com](http://www.ripleycountyfarms.com)

Forrest Keeling Nursery  
Elsberry, Mo.

800.356.2401

[www.fknursery.com](http://www.fknursery.com)

To search for other growers that sell larger trees, check the Mo.

Department of Agriculture's directory: <http://agriculture.mo.gov/plants/nurseries/ngrowers.php>.

### Arkansas

Arkansas Forestry Commission  
501.296.1940

<http://www.forestry.state.ar.us/seedlingsales.html>

### Illinois

Mason State Nursery  
Topeka, Ill.

309.535.2185

Union State Nursery  
Jonesboro, Ill.  
614.438.6781

### Iowa

Iowa DNR Forestry  
800.865.2477

<http://www.iowadnr.com/forestry/nursery.html>

**AGROFORESTRY**

# Agroforestry opportunity created through land gift

By GENE GARRETT, DUSTY WALTER

The Center for Agroforestry knows the importance of the old adage, “seeing is believing.” With this in mind, its leadership envisions demonstration areas for the five agroforestry practices distributed throughout our state: alley cropping, riparian forest buffers, windbreaks, silvopasture and forest farming. Each has an important economic, environmental and biological contribution when properly designed and positioned on the landscape.

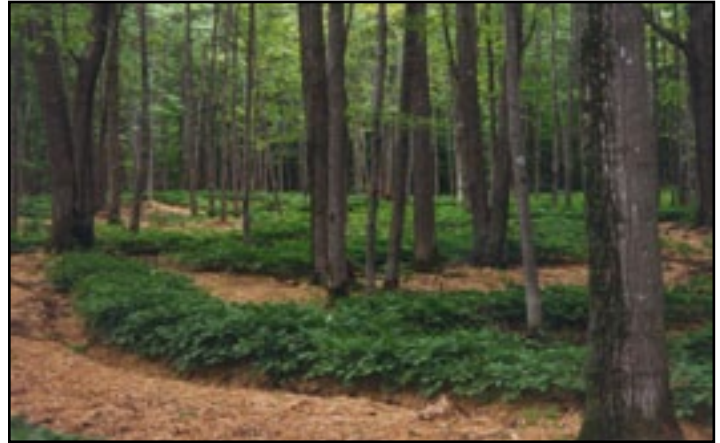
Forest farming, the practice of growing high-value, shade tolerant specialty crops under a forest canopy, is especially well suited to Missouri. With 14 to 15 million acres of forest land, most of which is unmanaged and owned privately, a unique opportunity is available for landowners to place their timber under management while creating conditions favorable for growing commercially valuable plant species on the forest floor. While the ideal light requirements in the understory may be lacking, they can be created through the proper application of timber stand improvement (TSI, thinnings to improve forests). Shade tolerant specialty crops like gourmet mushrooms, medicinals or landscaping species can be grown as cash crops while waiting for the harvest of trees that are managed for valuable sawlogs and veneer logs.

A 560-acre farm that has been pledged to UMCA is rapidly transitioning from a farm of unmanaged forests and fields to a forest farming enterprise, as part of the vision to increase agroforestry demonstrations. This farm will demonstrate the benefits of combining good forest management with the planting of commercially valuable, shade tolerant cash crop species on the forest floor.

The farm is a future gift from Douglas T. Allen, who believes that when agroforestry principles and practices are properly applied, they can provide “new approaches” to creating income, while improving the environment and enhancing wildlife habitat and food.

In honor of the donor, the farm has been named The Allen Research and Education Project Site. Allen’s vision is to create a “showplace” that will demonstrate to future generations life in harmony with the environment, while successfully providing for families.

The Allen Project Site located near Laurie, Mo. has already seen the replacement of 80 acres of Kentucky 31 tall fescue with more wildlife friendly forbs and tall-grass prairie species. In addition, extensive “feathering” of the field borders has been completed by either cutting and dropping undesirable trees, or planting species like elderberry, wild plum, false indigo and



*Photo courtesy of Gene Garrett, Dusty Walter*

An example of a forest intentionally managed to integrate a commercially valuable specialty crop grown on the forest floor.

others along the field edges. Both approaches dramatically increase the food and habitat for many wildlife species but are especially beneficial to young quail, rabbit and turkey in need of thickets to protect them from predators.

With the management needs completed for the open fields, the forested land has now been “cruised” for stocking levels and other management considerations, broken into stands (areas with similar species and conditions) for management and prioritized for TSI. This information has been compiled to create a forest management plan which will guide timber management decisions for the near future. All stands will receive TSI but all will not be placed under forest farming management.

Some stands because of their slope aspect, soil depth, organic matter content, etc., are better suited than others. The severity of the TSI cut within each stand will, in part, be dictated by the light requirements of the shade-loving, understory cash crop species planted. Many of these species will be tested at the site.

The Allen Research and Education Site is designed to become a major demonstration area for forest farming. Aldo Leopold once wrote: “a farm should be more than a food factory,” it should also be “a place of harmonious balance between plants, animals and people.”

In time, the forest farming practices implemented will create harmony between plants, animals and people. They also will demonstrate significant income generation opportunities from the shade tolerant cash crop species and the overstory trees. All of this will occur as a result of Allen’s vision, his land gift and application of an agroforestry practice.

## FOREST INDUSTRY

# Time for timber sales: Recent examples from consulting foresters

### TIMBER SALE ONE:

An interesting sale from this spring was in Macon County. A total of 1,293 trees were marked, with a total volume of 162,800 board feet (Doyle). The vast majority was white oak, along with some red oak, post oak, hickory and a few cottonwoods and a walnut.

The estimate was for 6,200 board feet of veneer white oak and 35,400 board feet of stave material. At fair marked value of \$45,000 - \$50,000. This forester had completed the client's cost basis last year and was able to calculate approximately a \$40,000 income tax deduction on sale revenue as timber cost basis depletion.

The bid opening was in early April and 10 bids received ranged from \$25,000 and \$77,000. The consulting forester's fees were about \$4,500, because time and expense is charged instead of commission. Rather than pay the income tax rate on \$77,000 (if the client could have gotten that price without professional forestry help), the client will pay a capital gains tax rate on about \$32,500.

This forester's client saved more than the forester's rate in taxes, and got a great price for the trees.

### TIMBER SALE TWO:

This consulting forester shared two sales in Clinton and DeKalb counties in January and March.

The first sale was on a farm of approximately 900 acres (160 timber) along creeks and 124 walnut trees. Lump sum bids ranged from \$17,680 to \$52,500. The forester marked an additional 79 walnut trees for additional volume and lumber. The estimated value for these trees was \$22,350.

The second sale had 211 walnut trees with 8,961 board feet in lumber. There was also 29,660 board feet in cottonwood, 740 board feet in hackberry, 2,520 board feet of honeylocust, and then an additional 1,000 board feet of bur oak and shingle oak. Bids went from \$8,900 to \$16,700 for this lump sum sale.

### TIMBER SALE THREE:

This consulting forester's first sale was from Madison county in mid-July and encompassed 49.3 acres with 680 trees. The volume for the sale was 165.5 MBF (Doyle) and was driven by high-quality trees. Bids were received between \$60,150 and \$79,275.

The second sale was on 104 acres (62 of which were premium acres) in Perry county in March. The volume for the lump sum sale was 670 MBF (Doyle). Bids for the marketable timber products, including pulpwood, were from \$328,746 to \$382,116. This forester noted that mitigating circumstances caused the owner to sell it all, and that one buyer attempted to cut the forester "out of the loop."

### TIMBER SALE FOUR:

At this consulting forester's sale, there was a wide variety of tree species. Most of the sale was made up of white oak and scarlet oak species, with volumes of 73.46 MBF and 76.42 MBF, respectively.

There were 124 black oak trees on the property as well. The rest of the mix was (in descending volume order): hickory, northern red oak, shumard oak, post oak, sweetgum, chinkapin oak, ash and sugar maple.

*For free information on having a timber sale and contacting a consulting forester, call 877.564.7483 or [www.callb4ucut.com](http://www.callb4ucut.com)*

## The Bid Box

Callaway County, Mo.  
Sale date: July 1, 2014  
110 acres (\$387/acre)  
Lump sum payment: \$42,536

Doyle tree scale used, 1,441  
BDFT/acre  
Tree DBH 16" and larger

Species	Grade	per foot	Volume	Value	# of Trees
White oak	Staves	0.76	26,000	\$19,760	848 (total species)
	Lumber	0.14	47,000	\$6,580	
Red oak	Grade	0.41	15,000	\$6,150	459 (total species)
	Pallet	0.14	30,000	\$4,200	
Mixed hardwoods	Lumber	0.13	12,000	\$1,560	269
Walnut	Lumber	1.000	1,440	\$1,440	16
Trees 14" DBH	Blocking	0.105	27,100	\$2,846	541
<b>Totals</b>			158,540	\$42,536	2,133



# Celebrating 40 years of taking care of Missouri's wonderful natural resources

from the Director of the Missouri Department of Natural Resources

By SARA PARKER PAULEY

Decades ago, we could see the visual impacts of pollution to our natural resources. Our air quality was so contaminated with pollutants that larger metropolitan areas urged people to stay home from work and school because the air was dangerous to breathe. The water in many of our lakes and rivers was littered with trash and pollutants, looking more like murky mug shots than picturesque portraits. But then citizens throughout the nation determined it was time to make a difference — to turn the tide toward protecting and improving our natural resources.

In 1970, the National Environmental Policy and Clean Air acts and later the Clean Water Act in 1972 were among the first environmental laws designed to build a foundation for a healthier America. The people in our great state recognized the need to protect and

**“During the last 40 years, we have made significant improvements to our air, land and water quality, such as properly disposing of nearly 17 million scrap tires from Missouri’s landscapes.”**

preserve its resources and created the Missouri Department of Natural Resources on July 1 under the Omnibus State Reorganization Act of 1974. This effort brought together nearly 15 existing agencies with complementary missions to achieve common goals in environmental cleanup and protection, conservation and management of natural, cultural and energy resources.

Although the department is relatively young, it includes older entities that joined the department due to their shared missions. Two of the oldest entities were the Missouri Geological Survey and Missouri State Park system. The Geological Survey was established in 1853, largely in response to extensive mining activities that began in 1740 when settlers began mining resources such as lead, iron, limestone, sand and gravel. The Missouri State Park Fund was created in 1917, which supported the purchases of the first state historic site and state park in 1923 and 1924, respectively.

Today, the department helps develop mineral, oil and

gas resources in an environmentally safe manner. The department protects the quality of water Missourians drink and the air they breathe, as well as Missouri’s land resources. The department provides outreach and education, technical and financial assistance to the state’s citizens, communities and businesses to protect public health and improve quality of life. Finally, the department preserves the state’s natural landscapes and cultural features through an outstanding network of 87 state parks and historic sites, along with the efforts of the state historic preservation office.

During the last 40 years, we have made significant improvements to our air, land and water quality, such as properly disposing of nearly 17 million scrap tires from Missouri’s landscapes. With your help, the department has enacted state implementation plans to address poor air quality and reduce emissions from permitted facilities. We’ve improved water quality by issuing and enforcing permits to control the quality and amount of wastewater that enters our waters. And we’ve benefited from advancements in science and technology that have paved the way for federal standards to be strengthened through time. As an example, lab equipment that once measured contaminants in parts per thousand now measures them in parts per billion.

The last 40 years also reflect a long history of working with external partners to achieve these many successes. The department communicates with these partners through commission meetings, forums, public meetings and other avenues. These relationships are critical in our efforts to protect, preserve and enhance Missouri’s resources.

We hope you will join with us in celebrating the many successes accomplished during the last 40 years to improve Missouri’s natural resources and public health. And though the impact of pollution may not be as visibly evident 40 years later, we know there is still work to do. The department’s monitoring efforts document this fact. Our next set of environmental challenges will include some obstacles that we will have to overcome together – with due diligence, sound science and collaborative approaches. With your help, we will continue to work to provide all Missourians a healthy environment in which to live, work and recreate.

**URBAN FORESTRY**

# Trees can make a fruitful lunch, too

By EUGENE L. BRUNK

Well, fall is upon us and it's time eat some of our trees. Not the whole tree, just the fruits and nuts some of our species produce! Beat the squirrels, deer and other woodland denizens for some tasty morsels left out there in your woodland, backyard or local "waste lot." Urban landscapes, in particular, are beginning to sport more tree species that produce edible fruits and/or nuts. Fruit trees, especially some of the dwarf varieties, make good landscape trees, if planted and managed appropriately, and they also provide delicious fruit to be enjoyed in the fall of the year.

True nuts come from trees. Apples and pears come from trees, but they're not nuts; but they're still good for you. Deer, bears, raccoons and squirrels also love them, so be ready for competition.

There are several native nuts out there that are good-tasting and good for you. Walnuts and pecans top the list, and are familiar to most Missourians. Hazelnuts are also a favorite, although it is really difficult to beat the wild beasties to a crop of them. If you do, you're in for a treat.

One can sometimes find chestnuts under a planted Chinese chestnut, if

there are other chestnuts around for pollination. Hybrid and non-native chestnuts are finding more favor among folks, so there may be more out there coming into bearing age. Chestnuts are good eating, especially when roasted on an open fire.

My personal favorite (although I



*Photo courtesy of Eugene L. Brunk*

Shellbark hickory nuts, still encased in their shells, are ready for picking.

like all nuts) is shellbark hickory nuts. I don't get them too often, because shellbark is not common around my home. Not many people collect or process them because they are difficult to crack and pick. But when you find a good shellbark nutmeat: yummy!

Among tree fruits — other than the apples, pears, plums — persimmon and paw paws have their devotees. I have found that you must catch their fruits at the right time to truly enjoy their taste. Eating a persimmon before it frosts can be an experience

your taste buds will remember for a while, while the banana-like taste of pawpaw sometimes takes a leap of faith if it isn't just right in ripeness.

So, check out some of the trees in your neighborhood to see if there is something out there to pique your tastebuds. Get permission from a landowner before harvesting fruits or nuts not on your property. In general, fruits and nuts can be gathered from most public lands for personal use. However, be sure to check with the local managers to make sure you don't violate a regulation.

Why not take advantage of nature's largess, especially in your own yard. In addition to the wonderful tastes, fresh fruits and nuts are high in nutritional value, and it makes no sense to let them fall to the ground and rot away or get tangled in the lawnmower. Harvesting also offers the opportunity to involve the family in a "togetherness" activity, which someday might be remembered as a valued tradition. There are many grown children who fondly remember collecting walnuts with their mom or dad, and making delicious goodies in the family kitchen during the cool fall weather.

Trees are not just for shade anymore.

**FOREST PEST UPDATE**

## Treating ash trees for emerald ash borer

If you live in a county where the emerald ash borer (EAB) has been detected, insecticide treatments are a viable option to protect ash trees. But fall is not the best time. Insecticide treatments are most effective when applied in the spring. First, a homeowner should answer a couple questions.

- Which ash trees are worth saving? Trees in poor health or growing in a poor location are not worth treating.
- Is EAB nearby? Insecticide is not recommended if it's

not in your county or within 15 miles.

Trees with a trunk diameter smaller than 15 inches can be treated by the homeowner with a soil drench preparation of imidacloprid. Larger trees should be treated by a certified arborist. Applications can be made in early spring until March or mid-April and must follow label directions. Tree care professionals have additional options for types and timing of insecticide applications.

# Missouri's forests – 12,000 years of change



Photo by David Stonner, MDC

Shortleaf pine shown here has only been a major component of the Ozarks vegetation for the past few thousand years.

climate became more similar to what it is like today. Only in the last 4,000 years or so did shortleaf pine migrate north into Missouri becoming well established in the Ozarks over the last few thousand years.

Today, big-toothed and quaking aspen trees still persist in some places in northern Missouri, at the far south end of the native range of these tree species in the Midwest. Another northern species, northern pin oak or

Hill's oak, also exists just in a few spots

By MIKE LEAHY

Back 12,000 years ago you wouldn't have had to travel to northern Minnesota or Canada to see a boreal forest, that is a forest type composed of tree species such as spruce, fir, white cedar, jack pine, birch and aspen. The boreal forest was right here in Missouri then, when glaciers covered much of the upper Midwest. Forestry researchers from the University of Missouri-Columbia, Richard Guyette and Mike Stambaugh, have discovered ancient spruce and fir trees exposed along a creek in Putnam County, Missouri. These trees were dated to be about 11,200 years old and were buried under soil and sediments only to be later excavated by stream flooding. Guyette and Stambaugh also found ancient oaks with similar ages indicating that as the glaciers retreated north, temperate hardwood species were beginning to mingle with the spruces and firs as the climate gradually warmed.

Likewise, scientists have examined the sediments at the bottom of sinkhole ponds in the Ozarks for their record of preserved pollen grains. This record of ancient pollen grains shows that the Missouri Ozarks were covered by spruce and fir forests from 18,000 to 12,000 years ago. By 8,500 years ago, the climate of Missouri had become warmer and drier than current conditions and much different than the cool moist conditions after the retreat of the glaciers. During these times the pollen record shows that oaks and hickories became well established in Missouri and that also prairie grasses and wildflowers became abundant. Around 4,500 years ago the

along the northern tier of counties in Missouri. These species were once more common in Missouri in the post-glacial era and today they are relicts of that cooler period. As with trees, some animal species native to Missouri are considered "glacial relicts" such as the wood frog and the four-toed salamander, which today persist in moist, cool habitats in the Ozarks.

Other species are relicts of the hotter, drier period in Missouri's climatic past, the "hypsihermal" of 8,000-5,000 years ago. During that time period more southwestern species moved into the state. For example, Ashe's juniper is a common juniper species across Texas and parts of Oklahoma. It finds habitat in Missouri today on hot, dry rocky dolomitic limestone outcrops and glade edges along cliffs in southwestern Missouri around the Branson area. Missouri is at the northeast corner of the range for Ashe's juniper. American smoke tree is another species that is at its northern edge of range here in Missouri and again finds its native habitat on dry, rocky and hot glades and woodlands on dolomitic limestone. Tarantulas and scorpions, denizens of glades in Missouri, are animal examples of what could be considered "hypsihermal" relict species.

Missouri's forests continue to change through time, albeit today with modern culture these changes can be quick and dramatic such as the introduction of non-native invasive species such as the emerald ash borer. One thing we can count on is that Missouri's forests will continue to change into the future.



**AGROFORESTRY**

# Bucks Unlimited, continued

From page one

by age 6. Not only is this early and heavy production highly desirable for deer, it is equally valuable for all wildlife species that depend upon acorns as a food source. The Bucks Unlimited Oak is truly the “performance oak for wildlife.”

The University of Missouri has entered into a legal agreement with The Forrest Keeling Nursery in Elsberry, Mo. to grow and market The Bucks Unlimited Oak. The trees will be grown using Forrest Keeling’s patented Root Production Method (RPM), which research by UMCA shows significant increases in growth and early fruiting of outplanted stock over seedlings produced using more conventional methods. A percentage of the profits earned on sales will be paid to the Center for Agroforestry to support future oak research.



*Photo by Kyle Spradley*

The Bucks Unlimited Oak trees are planted and growing.

## Missouri dam safety regulations

By ROBERT STOUT

The Missouri Department of Natural Resources Dam Safety Program is responsible for ensuring that all new and existing non-agricultural, nonfederal dams 35 feet or more in height meet minimum safety standards as established by the Dam and Reservoir Safety Law. The dam safety bill was signed and became law on September 28, 1979. To ensure safety standards are met, a permitting process is contained within the regulations.

Any owner of a proposed new dam which will be 35 feet or more in height is required to obtain a construction permit and a safety permit for the dam and reservoir.

A construction permit and safety permit for a new dam must be prepared by a licensed

professional engineer in the state of Missouri, and must include an engineering analysis to verify spillway capacity and slope stability standards are met. Once construction is complete, the safety permit becomes effective. An existing dam that was built prior to the enactment of the law is also required to submit an engineering analysis by a professional engineer or an agency engineer to prove the spillway capacity meets the law. This type of permit is called a registration permit. A slope stability analysis is not required for a registration permit unless the dam has visual signs of an unstable embankment or significant modifications are made to the height, slope, or water storage elevation.

Safety and registration permits are required to be

renewed at a minimum of every five years. Currently the renewal inspection is performed by the Mo. Department of Natural Resources, Dam and Reservoir Safety staff, unless the owner wishes to retain the services of another licensed professional engineer. For additional information on dam regulations in the State of Missouri contact MDNR Water Resources

“Any owner of a proposed new dam which will be 35 feet or more in height is required to obtain a safety permit for the dam and reservoir.”

Center, Dam Safety Program at 573-368-2175 or visit <http://dnr.mo.gov/env/wrc/damsft/damsfthp.htm>

# Fill in the calendar now

## GREAT RIVER ROAD CHESTNUT ROAST

On Saturday, October 18, the fourth annual chestnut roast is back. Head to the Forrest Keeling Nursery in Elsberry, Mo., from 10 a.m. until 4 p.m. The day is chock-full of activities, from tasting freshly-roasted chestnuts and other fall foods to kids' activities, crafts and demonstrations. UMCA will also be roasting and selling chestnuts, too. More info: [http://www.fknursery.com/index.cfm/fuseaction/calendar.detail/event\\_id/7/index.htm](http://www.fknursery.com/index.cfm/fuseaction/calendar.detail/event_id/7/index.htm)

QUICK FACTS  
October 18  
Elsberry, Mo.

## 20TH ANNUAL FALL FORESTRY FIELD DAY

QUICK FACTS  
October 16  
Valley Falls, Kan.

John and Karen Buchanan's Tree Farm in northeast Kansas is the site for Kansas Forest Service's forestry field day. Their farm has established an alley cropping system where they produce hay crops as well as high-value trees. The details of the system will be shared by the Buchanans and foresters, wildlife biologists and natural resource professionals along with many other educational sessions. More details can be found at [www.kansasforests.org](http://www.kansasforests.org).

## MCFA + MOSAF JOINT FALL MEETING

The joint fall meeting held by the Missouri Consulting Foresters Association and the Missouri Society of American Foresters will be on October 15-16, 2014. The location is the Ozark Underground Laboratory in Protem, Mo.

Members of the two groups are the guests of Dr. Tom and Cathy Aley while learning about subsurface aspects of the Ozark hills. Work in the Ozark Underground Laboratory consists mostly of land and water use issues in the landscape of the area. Hard hats are not required to head underground to find out more about the subsurface impacts that surface activities can create. Only fifty people can go on the cave tours, so RSVP early, well before the October 3 deadline. Registration is \$40 per person for members. Full details on how to register is on MoSAF's website: [http://www.mosaf.net/uploads/3/0/0/4/30049205/joint\\_fall\\_meeting\\_2014.pdf](http://www.mosaf.net/uploads/3/0/0/4/30049205/joint_fall_meeting_2014.pdf)

QUICK FACTS  
October 15-16  
Protem, Mo.

Learn about  
environmental  
forestry

## HORTICULTURE + AGROFORESTRY RESEARCH CENTER FIELD DAY 2014

QUICK FACTS  
October 4  
9 a.m. - 2 p.m.  
10 Research  
Center Rd.  
New Franklin, Mo.

HARC's field day this year is Saturday, Oct. 4. Tours start at 9 a.m. and topics will include specialty crop production, like chestnuts, black walnuts and pecans. Other topics planned are silvopasture, flood tolerance trials, biofuel trials and pine straw production. Also included in the day is a tour of the Thomas Hickman House, which is one of Missouri's oldest brick homes. A highlight of the day will be a demonstration of a commercial chestnut harvester (don't miss this). Lunch will be included during this free event, so please RSVP in advance. Contact Nancy Bishop at [bishopn@missouri.edu](mailto:bishopn@missouri.edu) or at 660.848.2268.

## THE NATURE CONSERVANCY LANDOWNER WORKSHOPS

The Nature Conservancy has created a series of evening sessions for private landowners to give them more information on many topics from wildlife management to financial assistance. One of their primary goals is to help conserve "working forests" in the Ozarks, which are forests that provide economic benefits for the landowner. Landowners can improve their woodland health, and in turn, these forests help keep water clean and support river-based recreation.

Two events are left in the series for attendees! September 25, from 5 - 7:30 p.m. to learn about enhancing wildlife habitat and managing controlled burning. September 27, from 9 a.m. - 2 p.m., visit sites with different management options. For both events, meet at the Twin Pines Conservation Education Center near Winona, Mo. Contact Rebecca Landewe at [rlandewe@tnc.org](mailto:rlandewe@tnc.org) or 573.323.8790.

QUICK FACTS  
September 25 -  
Wildlife +  
Controlled Burning  
September 27 -  
Field Tours

Winona, Mo.



# green horizons

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## CONTRIBUTORS



## CONTACT GREEN HORIZONS

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

Mike Gold  
Green Horizons  
University of Missouri  
203 ABNR  
Columbia, MO 65211  
email: [goldm@missouri.edu](mailto:goldm@missouri.edu)  
phone: (573) 884-1448

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 School of Natural Resources  
College of Agriculture, Food and Natural Resources

 The Center for Agroforestry  
University of Missouri

*A Global Center for Agroforestry, Entrepreneurship and the Environment*



## Calendar of Events

**September 25 + 27, 2014** — The Nature Conservancy Landowner Workshops, on controlled burning and demonstration tours; Twin Pines Conservation Center, Winona, Mo. – Contact Rebecca Landewe at [rlandewe@tnc.org](mailto:rlandewe@tnc.org) or at 573.323.8790 for more information or to attend.

**October 3-4, 2014** — Walnut Council of Missouri Fall Field Days, with tree farm visits, post-dinner business meeting and speakers; near Linneus, Mo. – [www.walnutcouncil.org](http://www.walnutcouncil.org)

**October 4, 2014** — Horticulture and Agroforestry Research Center Field Day; near New Franklin, Mo. – <http://www.centerforagroforestry.org/events/2014HARCfieldday.pdf>

**October 15-16, 2014** — Missouri Consulting Foresters Association Fall Meeting – Advancing Environmental Forestry – Ozark Underground Laboratory, Protem, Mo. – contact: Shelby Jones, [midwestforestconsultants@embarqmail.com](mailto:midwestforestconsultants@embarqmail.com)

**October 16, 2014** — Kansas Forest Service 20th Annual Fall Forestry Field Day; Buchanan's Tree Farm, Valley Falls, Kan. – more information at [www.kansasforests.org](http://www.kansasforests.org)

**October 18, 2014** — Great River Road Chestnut Roast, from 10 a.m. - 4 p.m. with crafts, demonstrations and kids' activities; Elsberry, Mo. – [http://www.fknursery.com/index.cfm/fuseaction/calendar.detail/event\\_id/7/index.htm](http://www.fknursery.com/index.cfm/fuseaction/calendar.detail/event_id/7/index.htm)

**August - October 2014** — Missouri Agriculture Experiment Station Field Days; Various sites – [aes.missouri.edu](http://aes.missouri.edu)