green horizons

Growing tomorrow's future today.

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Mike Gold, Gene Garrett and Hyelee Won editors

New Agroforestry Opportunity from NRCS

By Nate Goodrich, NRCS state staff forester and Joe Alley, NRCS area forester

Agroforestry is a unique land management approach that intentionally blends agriculture and forestry to enhance productivity, profitability, and environmental stewardship. In 2010, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and Forest Service, along with numerous other partners and stakeholders, developed the USDA Agroforestry Strategic Framework to increase awareness and support for agroforestry across the country. The Framework was followed by a Departmental Regulation that set forth USDA policy and direction including:

- Increase the use of agroforestry by landowners and communities
- Advance the understanding of, and tools for, applying agroforestry
- Incorporate agroforestry into an all-lands approach to conservation and economic development

In the past, agroforestry adoption in Missouri has been relatively limited and has focused primarily on windbreaks and riparian forest buffers. Improvements in 2017 will offer financial assistance to establish agroforestry practices through the Environmental Quality Incentives Program (EQIP). EQIP provides financial assistance to farmers, ranchers, and forest landowners to help them address resource concerns and protect natural resources on their property through conservation. EQIP allows NRCS to work with landowners to address resource concerns associated with crop productivity, soil health, livestock, forest health and wildlife habitat. **For the first time, Missouri NRCS will offer a dedicated fund pool in Fiscal Year 2017 for Agroforestry and Woody Crop Establishment**.

NRCS is supportive of advancing agroforestry in Missouri for several reasons. In addition to promoting small farm sustainability, agroforestry practices have proven effective at addressing greenhouse gas mitigation, creating more climate-resilient farms, and improving water quality. Also, the 2014 Farm Bill supports specialty crops, locally grown crops and outreach opportunities to organic, veteran, and historically underserved farmers, ranchers, and forest landowners. Like agroforestry, interest in establishing alternative woody crops, such as elderberry and other fruit, nut, and berry-producing plants has increased recently, especially from producers with smaller acreages. During previous EQIP sign-ups, agroforestry and specialty woody crop project applications have not always competed well against other conventional applications. Providing an opportunity for financial assistance via this new dedicated fund pool will result in more agroforestry practices being funded and installed on the ground, supporting viable small farms.

Technical and financial assistance will be available for landowners to install the five traditional agroforestry practices: alleycropping, multi-story cropping, riparian forest buffers, silvopasture, and windbreaks/shelterbelts. Other supporting practices such as cover crops, tree and shrub site preparation and establishment, field borders, mulching, and conservation cover will also be available. Applications will be evaluated and ranked based on the number of agroforestry practices installed, the estimated carbon sequestration and greenhouse gas emission reductions based on planned practices, and the diversity of woody species planted.

EQIP applications are accepted year round; however, NRCS establishes application "cut-off" dates for evaluation and ranking of eligible applications. **To be considered for the 2017 EQIP Agroforestry and Woody Crop Establishment fund pool, producers must file applications by the first sign-up deadline, which is anticipated to be in mid-November 2016, but the date has not yet been determined.** Farmers can submit applications at local NRCS offices. NRCS also offers free technical assistance to all Missouri residents.

More information about NRCS programs and assistance can be found online at http://www.nrcs.usda.gov/wps/portal/nrcs/site/mo/home/ or by contacting the NRCS office serving your county. NRCS employees in county offices can provide more information about how to apply for benefits offered by NRCS.

IN THIS ISSUE

Chestnuts Ripening Across Missouri

By H. E. 'Gene' Garrett and Mike Gold, Center for Agroforestry

Very soon, chestnuts (the Chinese variety) will begin ripening across the Missouri landscape, and the Center for Agroforestry will host its 10th Missouri Chestnut Roast at the Horticulture and Agroforestry Research Center near New Franklin. Neither would be happening if the "Center" had not launched a major research initiative on Chinese chestnut in the 1990's. Chinese chestnut is unlike the American chestnut which once dominated eastern forests but fell prey to the chestnut blight, introduced from Asia around 1900. In contrast to this tall, majestic timber species, Chinese chestnut is an orchard species that produces a large, brown, nutritional fruit (nut) that is 99% fat free, low in calories, free of cholesterol and gluten but high in vitamin C and healthy complex carbohydrates. It is one of three major species of chestnut available to help meet a growing market demand in the U.S. The European {E}, Japanese {J} and E x J hybrids are also widely grown in the U. S. (i.e., U.S. West Coast and Michigan), but above average cold tolerance (-20°F) and resistance/tolerance to the chestnut blight make Chinese the best adapted to conditions found in Missouri and surrounding states.

The Chinese chestnut is a small tree rarely reaching heights greater than 40 feet that is initially planted on a 20 X 30 (73 trees/acre) or 30 X 30-foot spacing (48 trees/acre). Depending on initial spacing, after age ~15, this number is reduced to permit all remaining trees to receive full sunlight. Grafted cultivars bear marketable quantities of chestnuts by age 6 to 9, and in good soils with proper management, will yield 1,500 to 2,000+ pounds/acre by age 12 to 15 with a value ranging from $1.50 to $7.00/pound. While many cultivars are available for purchase, the Center for Agroforestry recommends a limited number for Missouri including: 'Qing', 'Sleeping Giant', 'Peach', 'Homestead', and 'Gideon'.

American consumers are still largely unfamiliar with chestnuts, however, market demand for domestically grown chestnuts has increased greatly over recent years. U.S. chestnut growers have more demand than they can supply. In 2013, the U.S. imported approximately 9 million pounds of chestnuts. Currently, only 2.4 million pounds are produced domestically with the majority of the chestnuts consumed coming from China, Italy, and Korea. With strong market trends toward "buy local", this provides a unique opportunity for Missouri growers to enter the market without having to worry about over production.

One of the first commercial chestnut orchards in Missouri was established in 1992 by Senator Kit Bond in Mexico. While the site was less than ideal for the species, (Chinese chestnut performs best in well-drained, loamy to sandy loam soils), his orchard flourished and has provided seed for Forrest Keeling Nursery in Elsberry for many years. This partnership has witnessed a dramatic increase in planting stock sales since the early 2000's as well as a shift in planting stock type being purchased. Current demand has shifted from bare-root seedlings to containerized, grafted cultivars. Since 2007, production and sales of RPM™ (a patented technology) containerized chestnuts has increased by more than 600% and grafted stock by more than 33%, at the Forrest Keeling Nursery. This suggests that landowners are interested in getting into production quickly and are willing to increase their up-front investment costs to achieve early production.

While Senator Bond was one of the early adopters in establishing chestnut, many others have followed with new orchards popping up across Missouri. Lou and Joe Naeger have a 10-acre orchard in St. Genevieve County that has been producing commercial quantities of chestnuts for the past 3 – 5 years with most of their crop being sold in local retail outlets. Steve Shifley, a fellow forester, established his 7-acre orchard in 2005 in Boone County and has been developing local markets in and around Columbia. Not to be outdone by Senator Bond, in 2009 former State Senator Bill Stouffer and his wife Sue Ellen established what has grown to 15.5 acres of chestnut on a 20 X 30-foot spacing in Saline County. To maximize returns, they alley crop (one of five agroforestry practices) with winter wheat and have their entire orchard under fertigation and surrounded by a 10' deer fence. Jody Porter, another recent adopter, has established 7 acres in Douglas County in southern Missouri and his trees, grafted, RPM cultivars planted on a 30 X 30-foot spacing and placed under irrigation, are just beginning to bear. Jody and his wife plan to market locally around Ava targeting the health food market. While we know the location of many Missouri orchards, there are others we are unaware of. If you have an orchard in Missouri or know of someone who does, please contact Caroline Todd in our Center for Agroforestry (573-884-2874 or email: ToddC@missouri.edu).

Indeed, the chestnut season will soon be upon us, chestnuts will be ripening across Missouri and we will be celebrating the dawning of a new Missouri industry, one especially suited to the small family farm.

Chestnuts ready for harvest. UMCA will host its 10th Annual Chestnut Roast on October 8th.

www.centerforagroforestry.org

California Carbon Dollars Come to Missouri

By Hank Stelzer, MU Forestry Extension

Note: Adapted with permission from 'Shannondale earns $1 million-plus from California's carbon credit market' by Andrew Sheeley that appeared in the Salem News, July 12, 2016.

Seven years ago Shannondale Minister Jeff Fulk was full of desperate prayers. His rural mission in north Shannon County had a proud history, but was teetering on the edge of ruin. Although being one of Missouri's oldest Tree Farms, its future was in question due to the tough times created by the Great Recession.

"After the economic downturn hit in 2008, donations went down for not only us but for our entire conference, the Missouri Mid-South Conference of the United Church of Christ," Fulk says. "There was serious talk of Shannondale being sold like many other outdoor ministries. I remember sitting up here one day and praying 'God I need a miracle; I need you to tell me what we are going to do.'"

Fulk says his plea was answered three days later in the form of a forester with the L-A-D Foundation who told him about a new innovation, carbon offset credits.

"I'd never heard about any such thing before. At first I was thinking what's the catch, this sounds too good to be true," Fulk says. "But now, after a lot of hard work getting through red tape, we are remodeling our chapel and making other emergency repairs thanks to our conference receiving $900,000 by selling carbon credits, while still having some in the bank. There's a good chance Shannondale would not be here today if it weren't for the carbon offset program."

Shannondale's success has been made possible by California passing the Global Warming Solutions Act in 2006. The law's goal is to cap the total amount of greenhouse gas emissions allowed in that state to 1990 levels by the year 2020. It works by giving California corporations the option to account for a small amount of their total greenhouse gas emissions by purchasing carbon offset credits from registered tree farms, managed forests and other entities that absorb some of the carbon dioxide these corporations produce.

"The whole idea behind the program is to put a cap and a price on greenhouse gas emissions and to help carbon emitters meet their cap by funding forest landowners to practice sustainable forestry and thereby store extra carbon in their forests," says Dylan Jenkins, vice president of Portfolio Development for Finite Carbon, a Pennsylvania company which specializes in developing forest carbon offset projects.

Shannondale lodges will be restored with the money received.

In 2013, Shannnondale was able to enter into a partnership with Finite Carbon to register 3,982 acres of forest with the Climate Action Reserve, which is the official registry of carbon offset projects and determines how many credits each project will receive. As part of registration, Shannondale has adopted forest management practices that increase its carbon offset ability relative to common practice baseline levels.

"The forests are managed in such a way as to maximize the amount of carbon they capture, such as growing bigger trees for a longer period of time," Jenkins says. "All of this is done voluntarily by the property owner, and they can still actively produce wood products through a sustainable harvest. It's not an all or nothing kind of deal."

The $900,000 that Shannondale received can be thought of as a 'back payment' for the 120,000 metric tons of carbon the 4,000-acre forest has stored since 1949. Why 1949? Because in that year, Shannondale's founder, the Reverend Vincent Bucher had the foresight to enroll the forest in the American Tree Farm System. Shannondale today is the oldest continuously owned tree farm in Missouri and the last surviving of the first 10 tree farms designated by the state in 1949.

"What we are doing with carbon credits I believe is in line with our religious mission," Fulk says. "God placed us here to be stewards of the Earth, he wants us to take care of our environment. We need to keep the trees and not cover everything with pavement so our forests can not only provide us oxygen, but clean our air."

In addition to generating $900,000 from previous years, Fulk estimates participating in the program will annually yield $12,000 to $20,000 for the Missouri Mid-South Conference of the United Church of Christ because the forest will annually offset another 2,000 tons per year.

Bucher wouldn't have known it at the time, but decades after his passing his tree farm not only saved Shannondale but will last at least until the 23rd Century.

"As part of our agreement with the program we signed a 199-year commitment with the Climate Action Reserve, meaning the forest will be here long after we are all gone," Fulk says "That means more to me than the money, knowing that Shannondale will thrive well into the future and the forest is safe. This land is protected. No one will be able to come in here and clear cut the trees for any kind of big new development."

"All of the money received will be invested by our conference, but Shannondale will also be receiving a percentage of that total," Fulk says. "One thing I want to say is none of the money we're receiving is taxpayer dollars. We are selling credits directly to carbon emitters. There is no government involvement in that process what-so-ever."

There are many exciting things happening at Shannondale these days. With support from the carbon credit program its campgrounds and lodges are being fixed up and remodeled (see photo). Fulk says his current plans are for all the original 1930s era buildings to be restored.

Now before you contact Finite Carbon to enroll your forest, consider this. To gain the interest of California's Climate Action Reserve, one must own a tract comparable in size to Shannondale. And one must be willing to enter into a long-term agreement. A carbon contract can be thought of like a conservation easement that is transferred to the new owner; rights as well as responsibilities.

Still, at least some serious dollars are beginning to be realized from the carbon market. Stay tuned to see if future developments enable landowners with smaller tracts of land and shorter time horizons to have opportunities like Shannondale.

The Future of Missouri Forests

By Steve Shifley, Research Forester, U.S. Forest Service

Future Forests of the Northern United States was recently published by the U.S. Forest Service, Northern Research Station (see http://www.treesearch.fs.fed.us/pubs/50448 to download it or request a printed copy). Collectively, the 29 authors of this report describe alternative scenarios of forest change from 2010 to 2060 with results organized around themes relevant to sustainable forest management: biodiversity, productivity, health, water, biomass, carbon, timber products, non-timber products, employment, recreation, social frameworks, legal frameworks, and urban forests. Results consider alternative future scenarios—including climate change—for the 20 northern states bounded by Maine, Maryland, Missouri, and Minnesota. Following are highlights of major trends anticipated for Missouri from 2010 to 2060.

The population of Missouri is likely to increase from about 6 million people to between 7 and 9 million people. This means less forest land per capita, less recreation land per capita, and more forest owners with forest ownerships split into smaller tracts. The proportion of the total population living in the urban areas will increase, and management of urban trees and forests will become increasingly important in serving urban residents.

The total area of forest land will remain stable. Since 1977, the area of Missouri forest land has gradually increased from 13 to 15 million acres, mostly due to reversion of former agriculture land to forest. In the next 50 years, expanding urban areas will subsume perhaps 0.6 million acres of forest land, mostly in proximity to existing urban areas. Nevertheless the proportion of Missouri that is forested—currently about 35 percent—will remain above 33 percent.

The forest landscape will be dominated by middle-aged forests. As much as 63 percent of the forest area will be concentrated in 40- to 80-year age range with only 7 percent younger than 20 years and only 4 percent older than 100 years. For more detail on this clustering of age classes see the "The Future of Northern Forests" in the May issue of Green Horizons.

Forest health issues will be abundant, pervasive, and challenging. Oak decline is likely to affect large expanses of aging trees of the red oak group, especially in the Ozarks. The emerald ash borer, Asian long-horned beetle, gypsy moth, and thousand cankers disease will be constant threats, along with a wide array of invasive plants.

Water quantity will remain adequate, and water quality will decline slightly. Missouri has defined best forest management practices that protect water quality in areas where they are applied (http://mdc.mo.gov/trees-plants/forest-care/missouri-forest-management-guidelines)

Growing stock volume on timberland will plateau at about 19 billion cubic feet. This results from the combination of aging forests with lower growth per acre and a small decrease in forest area due to urbanization. This pattern is a sharp change from the rapid volume increases observed from 1977 to 2010 (Figure 1).

The proportion of forest area by cover type will remain nearly constant. However, the long-term expectation for 2100 and beyond is that climate change will lead to changes in species composition that mostly occur as forests regenerate following harvest or other disturbances. With gradual changes in climate and a relatively low rate of forest regeneration, it is likely that many decades will pass before climate-induced changes in species composition become readily apparent. Two excellent resources on potential effects of climate change on Missouri forests include the Climate Change Tree Atlas (Landscape Change Research Group 2014) and the Central Hardwoods Ecosystem Vulnerability Assessment and Synthesis (Brandt et al. 2014).

Walking, family gatherings, picnicking, photography, and driving for pleasure are likely to remain the most common recreation activities. Future participation rates are expected to increase for horseback riding and motor boating but decline for hunting and activities in primitive areas.

Those interested in more details about future trends for Missouri forests can consult the interactive Northern Forest Futures Data Dashboard (http://www.nrs.fs.fed.us/futures/predict/) and examine other publications described on the Northern Forest Futures website (http://www.nrs.fs.fed.us/futures/).

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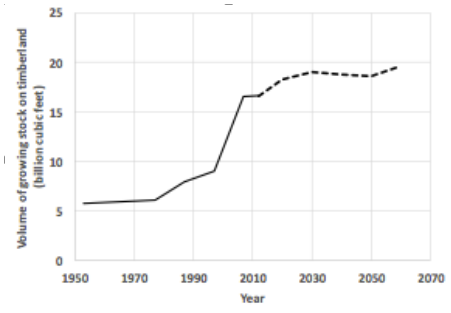

Figure 1. *Past and projected volume of growing stock trees at least 5 inches dbh, Missouri. Stocks of biomass and carbon are expected to follow similar trends.*

A Windbreak to Mitigate Odor and More

By H. E. 'Gene' Garrett, Center for Agroforestry and Dusty Walter, UMC Ag. Expt. Sta.

Vegetative Environmental Buffer (VEB) design and use for odor mitigation, animal welfare, and energy savings around livestock operations has taken on new prominence in recent years. While they may also be called windbreaks or shelterbelts (all are agroforestry practices), the purpose is the same regardless of the name. Trees, shrubs and grasses are strategically placed in association with livestock operations, especially Confined Animal Feeding Operations (CAFO), to filter, purify, disperse and, in general, reduce odors, while providing protection for the animals and creating a more visually pleasing appearance. Studies have demonstrated that the public is more receptive to CAFO's that are screened through the use of trees than those that are not. VEB's alone will not eliminate odor problems associated with confined feeding operations, but they will effectively reduce them and positively impact public perception.

A CAFO operation with a VEB of Viburnum, redcedar and willlow.

Most odorous chemicals and compounds become attached and are carried on particulate matter (e.g., dust) that originates in or around livestock feeding operations. Because of this, the odor tends to remain close to the ground as it disperses. Properly positioned plant material (trees, shrubs and grasses) can effectively intercept and filter out much of the particulate matter due to their complex leaf shapes and large leaf surface areas. Studies have shown that as much as 35 to 55 percent of dust particles in moving air can be removed by VEB's. This interception is especially important, as it helps reduce odor movement. Also of major importance is the vertical mixing of the odor-laden particulate matter as it rises up and over the VEB and mixes with the air above. Turbulence encountered above the VEB enhances the mixing, creating a dilution effect as the odor plume continues to rise and disperse. Furthermore, a "quiet zone" for a distance of about 8-to-10 times the height of the tree row downwind of the windbreak, allows particulate matter and odor to settle out.

VEB design is very important. The effectiveness of a VEB is determined by its width (number of rows), length, continuity, orientation (if not continuous around the animal facility), height, density and beauty. In addition, overall success is very dependent upon choosing the right species to plant. Species selected for use must be matched to the site being planted. Considerations are, the soil type, precipitation, site drainage characteristics, and natural range of each shrub and tree species. Three-to-five rows of trees and shrubs are normally recommended to provide winter protection for livestock and maximize the mitigation of odor. Since conifers have a greater ability to absorb air pollutants and provide winter protection than deciduous species, one-to-two rows of conifers should be included. However, the number of rows is not as important as the density created. Typically, a VEB should provide a density of approximately 60% (60% of the wind is deflected over the VEB and 40% passes through it). In addition to odor management, and animal protection, this density can significantly reduce the seasonal cost of heating and cooling confined animal facilities.

Upwind VEB's will reduce the amount of dust and odor that is picked up and transported by the wind, while downwind VEB's further control the wind speed and allows particles laden with odor to be filtered and settle out. Because odors tend to collect near the ground, excessively tall trees are not required if properly positioned and oriented. Heights of 18-to-36 feet are adequate for intercepting and diluting odor plumes while providing physical protection for open-feedlots and CAFO buildings.

In Missouri, the USDA, Natural Resources Conservation Service currently recommends a minimum of 3 rows. One row must be a conifer and adequate spacing between rows is required (20 – 50 feet). Financial assistance through EQIP is available for VEB's even though they are called windbreaks/shelterbelts, and can be applied to cover a large portion of the costs associated with their establishment and maintenance. Coverage for containerized planting stock and temporary irrigation is authorized. The installation must follow the NRCS's Windbreak/Shelterbelt Establishment Conservation practice standard (CPS). Contact your local or state NRCS office for more details.

A Role for Natural Reproduction in Landscaping

By Eugene L. Brunk

Every now and then, a homeowner may see some sort of woody "sprout" growing in their yard, flower bed, or some other out of the way place that doesn't get mowed regularly. Many wonder what that plant is, and then assume it's a weed, so they pull it or grub it out of the way. Unfortunately, we may be missing an opportunity to let the "sprout" grow into a valuable asset for our landscape —– particularly if it's growing in a spot that could use a tree. Foresters call these plants natural regeneration (or more correctly, natural reproduction), and they may have come from a very desirable species, such as an oak or redbud. Of course, "the wild thing in the yard" more often comes from a more prolific, undesirable species such as silver maple or Siberian elm. Then it is truly a "weed," and needs to be removed.

For those of you who don't know the difference, here is some help, a weed is simply a plant that is out of place. It's much the same as the difference between soil and dirt, i.e., dirt is soil that's out of place. We all should know by now that all plants, regardless of species, are valuable within their natural setting. Thus, a silver maple or cottonwood growing in the woods down by the creek serves a very useful purpose in protecting the stream corridor, providing wildlife habitat, etc. However, if either of these species is growing in your front yard, or, worse yet, in your spouse's prize flower bed, the silver maple or cottonwood can cause a great deal of consternation and expense. Something better should be in your yard.

Anyway, I digress.

If you find a woody sprout in a desirable spot for a tree, I encourage you to find out if it is a desirable species for that spot. This may take some technical assistance if you are not familiar with identifying trees that are only a few inches tall, and have only 2 or 3 leaves. Try to get it identified without removing any of the leaves. I'd recommend leaving it for a year or so, until it is a little larger, in order to determine what it is. You can always remove it later, with little hassle, if it turns out to be a "weed."

Taking advantage of naturally-occurring seedlings can be a good strategy for managing your landscape, if they meet the criteria of the "right tree, right place" approach. Of course, I do not recommend keeping even a good species (such as an oak) in your favorite day-lily bed. But, then again, you might be able to transplant that good old white oak, or red oak seedling to that spot along the back fence where you've been contemplating filling in with "something." If the local squirrels buried the acorn, then forgot about it, the resulting little oak tree may be just the thing for your landscape, since it's one of the locals too. Best of all, it's also free!

Give natural regeneration a try, when you get the opportunity!

A cottonwood seedling that is definitely a "weed."

The Bid Box

By HANK STELZER | *MU Forestry Extension*

In this installment of The Bid Box, we highlight a timber sale out at the University of Missouri's Dairy Farm near the I-70 Midway exit, Missouri.

Boone County

77 forested acres
162,100 bd. ft. (Doyle Scale)

96,200	**white oak**
16,700	**black walnut**
15,600	**northern red oak**
9,500	**black oak**
8,500	**other red oak**
7,000	**hickory**
8,500	**mixed species (ash, sycamore, cottonwood, basswood, cherry, maple)**

Forester valued the sale at $75,000
NINE bids received
$78,600
$63,000
$62,370
$51,000
$50,900
$48,625
$46,251
$45,200
$34,750

Landowner took the high bid. It is interesting to note that the high bidder was the farthest from the sale!
Return: $1,021 per acre

Harvesting Tip: Communication is the key when selling timber. When soliciting bids for your timber, make sure you work with your forester to include your expectations in the bid notice. This tells the logger you care about your land and you will be an active seller. It also helps ensure successful execution of a timber sale contract between you and the logger. In this case, the Director of Natural Resources for MU's outlying farms stipulated these expectations:

1. Directional felling must be used to protect the trees that are to be released to grow.
2. The buyer is expected to follow and apply Best Management Practices for Harvesting.
3. Tree tops are not to be left in any of the intermittent streams within the harvest area.
4. Log decks and landings should be cleared of any tops, limbs, and butt-offs when the harvest is complete.
5. Log trucks must use the edges of the pastures when transporting logs from the log deck/landing area.
6. In order to access county roads, the buyer may have to install a temporary culvert where the log trail meets the county road.
7. The buyer may have to install waterbars on steep ground.
8. The buyer is expected to clean up all trash created from the harvest activity.
9. The buyer is expected to remove all tops and logging debris from the field pastures when harvest is complete.

It is okay to list several expectations. But, keep in mind that some expectations may affect the logger's bid.

The above items, as well as others, for you to consider in a timber sale contract can be found in the MU Forestry Extension Guide, G5057 - Basic Elements of a Timber Sale Contract. And, if you have never sold timber before, check out MU Guide, G5051 - Selling Timber: What the Landowner Needs to Know. Lastly, Guide, G5056 - Managing Your Timber Sale Tax, will show you a professional forester and your accountant can reduce your tax liability. Until next time, stay safe and enjoy your woodland!

Fighting Emerald Ash Borer in St. Louis

By Tom Ebeling, Community Forester, Forest ReLeaf of Missouri

The City of St. Louis began preparing for an Emerald Ash Borer (EAB) infestation in 2008, when the pest was first discovered in the state of Missouri. The first step that the city took was to update the tree inventory. The study revealed that there are approximately 15,000 Ash trees along the streets and in the parks of St. Louis. At 17% of the total trees maintained by the city, Ash is the most common species along city right-of-ways. The city has not planted any species of Ash since 2008, and prioritized the removal of Ash trees that were known to be in poor condition. Despite best efforts, Ameren utility workers discovered EAB in St. Louis on May 16, 2015.

Since that time, the City has enacted a 5-year action plan that includes removal, retention and replanting with a goal of zero net canopy loss. In May of this year, contractors began removals in ward 1, which is the area surrounding the original infestation. Crews will work to remove about 2,600 trees every year for the next five years.

The City of St. Louis does not intend, however, to remove every ash tree in the city. Those ash trees that are 13 inches DBH (Diameter at Breast Height) or greater and in good condition will be treated by injecting the trunks with a botanical pesticide. The chemical is called TreeAzin and is produced by BioForest Technologies, Inc., in Canada. The active ingredient in TreeAzin is azadirachtin, which is extracted from neem tree seeds. Because it is a botanical compound, TreeAzin will degrade quickly in soil and runoff, minimizing the environmental impact. The compound is also safe to inject in high use public areas. Because all untreated ash trees will die, TreeAzin must be injected every two years to ensure the survival of the tree. In total, St. Louis will retain about 1,200 ash trees that are seen as too valuable to remove (about 7% of the current ash population).

In order to replant the voids created by the extensive removal operation, the City of St. Louis will be partnering with Forest ReLeaf of Missouri (FRM), a nonprofit nursery that grows native species of trees and shrubs for planting in public spaces. Forest ReLeaf will donate a variety of 15-gallon trees, as well as help coordinate the planting of those trees. The trees will be selected from a list of approximately 40 native species that are tolerant of urban conditions and suitable for street-tree plantings. Ideally, every ash tree that is removed will have a new acceptable native planted in its place, resulting in a zero net loss of canopy. Forest ReLeaf will plant 1,200 trees in ward 1 alone by the end of this year. With help from the City Forestry Division, community organizers, elected officials and countless volunteers, FRM will work throughout St. Louis to reforest areas devastated by EAB.

Forest ReLeaf is also conducting an extensive public relations campaign to educate the members of the communities most affected by the removal of ash trees. In many neighborhoods throughout St. Louis, most or all of the mature trees will be lost to this pest. It is important that the residents understand what has happened to the trees and what is being done to recover the loss. FRM is accomplishing this by exhibiting at community events, distributing informational flyers, reaching out to known neighborhood organizers, and educating the young people of the City. Because FRM has access to elementary and middle school audiences through its' educational programs, its' goal is to inform the children of these neighborhoods in the hopes that they will carry the information back to their parents and grandparents and subsequently get involved in the planting efforts. These outreach methods will help ensure that individuals are well-informed about the ongoing battle to maintain our urban forest in St. Louis.

To Read the City's action plan, please visit www.stlouis-mo.gov/ash-borer

Information on Forest ReLeaf's ash tree replanting efforts can be found at www.moreleaf.org/ashborer

Missouri's Tree Farm System

By Matt Jones, Vice Chair, Missouri Tree Farm Committee

Every year, the Missouri State Tree Farm Committee holds the annual Missouri Tree Farm Conference to honor the Missouri State Tree Farmer of the Year. Twenty-sixteen marks the 75th anniversary of the national Tree Farm program. This year the conference was held in Annapolis on April 29th and 30th to honor Iron County Tree Farmer Steve Lovell. During the indoor session on Friday afternoon, attendees received updates regarding changes to the Forest and Woodland Association of Missouri, Forestkeepers, and the new Missouri Managed Woods program. This was followed by an excellent presentation on the financial aspects of tree farming by Tree Farmer and Certified Financial Planner David Watson. Mr. Watson talked about taxation, establishing a cost basis, and successional planning. While not as much fun or as exciting as doing work on the ground, these topics can make or break a family legacy. Awards were given to Mr. Lovell as the Tree Farmer of the Year, and to the top inspecting foresters. MDC Resource Forester Jason Severe was honored as the Inspecting Forester of the Year. Mr. Lovell gave a heartfelt speech thanking by name everybody who had ever helped him with the management of his Tree Farm.

Iron County Tree Farmer Steve Lovell and Matt Jones, Vice Chair, Missouri Tree Farm Committee

Due to some good fortune, the rain stopped just in time for the field portion of the conference at Steve Lovell's Tree Farm on Saturday. Mr. Lovell bought his property in 1998 and shortly afterward contacted the Resource Forester Matt Jones for assistance with managing it. Steve has stated that one of his goals was to grow high quality timber. Unfortunately, Jones had to explain to him that growing high quality timber would not be possible right away due to the property being "high graded" before he purchased it. High grading occurs when only the very best trees are cut, leaving poor quality, stressed trees behind. These trees will never develop into high quality timber. Jones recommended a very heavy cutting that removed most of the poor quality trees and created ample space for a new crop of trees to sprout up. One goal of this management is to identify the best trees at an early age and periodically thin around them to maintain a healthy growth rate. The cutting was done in 2003 and the conference attendees were able to see the results of thirteen years of growth. What was once nearly barren ground just after the cutting, was now a thick area of 20 to 25-foot tall trees.

Participants heard about feral hog issues from Wildlife Biologist Mark McClain. McClain talked about hog reproduction rates, baiting and trapping hogs, and MDC efforts to eradicate feral hogs. Mr. Lovell has a hog trap on his property and with the help of his neighbor they have trapped and disposed of nearly two dozen feral hogs. Private Lands Conservationist Julie Norris spoke about food plots and wildlife watering holes. Mr. Lovell has five food plots and watering holes on his property. Norris talked about how to locate the food plots and water holes throughout the property to maximize their value for the wildlife. She also talked about how to maintain the food plots and what would be good to plant in them.

Feedback from the participants indicated that they really enjoyed the conference. As Tree Farmers and landowners, they like to be out on the land. They really appreciated the opportunity to see firsthand how the trees and the wildlife responded to the work Mr. Lovell has done. A big part of these tours is the discussion the Tree Farmers have amongst themselves about the practices they are seeing and how they compare to their property.

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Missouri Chestnut Roast

By Caroline Todd

This year marks the 10th anniversary of the Missouri Chestnut Roast hosted by the MU Center for Agroforestry. The Missouri Chestnut Roast is a festival celebrating Missouri agroforestry farming through industries such as tree nuts, elderberries, and forestry products.

Visit educational booths, walking tours, demonstrations including cooking demos, live music, handcrafted items, roasted chestnut samplings, the Whiz Bang "Science Show," a children's area, and more. Lunch can be purchased from the New Franklin Athletic Booster Club. The MU Mules will be there!

Missouri Nut Growers Association Meeting

By Hyelee Won

The Missouri Nut Growers Association is an organization that encourages individuals and businesses to grow nut trees. Association membership is open to anyone interested. Membership offers the benefit of sharing experience and advice with other members and a newsletter that will provide current events and issues regarding tree nuts and others that may be of interest to MNGA members. Membership is not required to attend the meetings.

The upcoming MNGA meeting on November 5th, 2016 is MNGA's Annual Fall Harvest Meeting. This year's meeting will be hosted by Paul Manson. The meeting will begin with a brief social hour with coffee followed by welcome and introductions. Equipment demonstrations will be held, and there will be an update session at the end of the meeting for the association.

Lunch will be available at the farm for $8, but attendees must RSVP in advance. The deadline to RSVP is November 1st. The names of those who RSVP will be entered in a drawing, and one lucky attendee will win a free lunch.

For more information on the Missouri Nut Growers Association Fall Harvest Meeting, please visit: www.missourinutgrowers.org. The directions to the Manson Farm, meeting agenda and lunch RSVP instructions can be found on the website.

2016 Green Lands Blue Waters Conference

By Mike Gold, Center for Agroforestry

Green Lands Blue Waters (GLBW) is a regional organization based in Minneapolis, MN, with the mission to "support the development of and transition to a new generation of multi-functional agricultural systems in the Mississippi River Basin and adjacent areas that integrate more perennial plants and other continuous living cover into the agricultural landscape." For more information on GLBW: http://greenlandsbluewaters.net/

This year's GLBW conference is hosted by the Center for Agroforestry and will be held on November 29th and November 30th at Memorial Union in the University of Missouri Campus. The conference theme is: "Going Green with Conservation-Based Farming: Market-Based Approaches to Promote Soil Health and Water Quality."

The 2016 GLBW conference brings a market-based focus to complement innovative, science-based approaches to conservation of soil and water quality. Landowners react positively when their "bottom-line" is enhanced. Proven, market-based options, including cover crops and perennial-based practices (i.e., agroforestry, perennial grains, biomass, forages, and winter annuals) support the deployment of "continuous living cover," and speak directly to the bottom line. Farmer-to-farmer strategies are required to scale up conservation for large scale impacts on soil and water quality.

In addition to working sessions on cover crops, agroforestry, perennial biomass crops, perennial forage / pasture systems, and perennial grains, as well as the perennial favorite "Tour of Watersheds in the Midwest", we have recruited local and regional experts to present at the conference including:

Opening keynote speaker -- Bill Buckner, President and Chief Executive Officer of the Noble Foundation. Closing keynote speaker -- Sean McMahon, Executive Director of Iowa Agriculture Water Alliance.

More information and registration details can be found here: http://snr.missouri.edu/green-lands-conference. Specific questions can be directed to: Michael Gold at 573-884-1448; goldm@missouri.edu.

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The Center for Agroforestry at the University of Missouri
203 Anheuser-Busch Natural Resources Bldg.
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Calendar of Events

Missouri Walnut Council Fall Field Days
September 30 and October 1
Please RSVP via e-mail (mowalnutcouncil@gmail.com) or call Aaron Twombly at 913-704-5210 by September 25th. Please note which days you plan to attend and if you will attend the Friday evening meal.
Website: https://www.walnutcouncil.org/state-chapters/missouri.html

Missouri Chestnut Roast
October 8, 2016
10 a.m. - 4 p.m.
Horticulture & Agroforestry Research Center (HARC), New Franklin
For more information, contact Caroline Todd at (573) 884-2874

2016 Missouri Nut Growers Association – Fall Harvest Meeting
November 5, 2016
9:00 a.m. – 2:00 p.m.
Weather permitting, attendees will see a full range of equipment used in the nut industry in operation.
Location: Paul Manson Property at 22848 Highway 24, Brunswick, MO
Lunch available for $8.
Please bring lawn chairs as seating opportunities are limited.
RSVP to Sara Jean Peters (417-275-4422) by November 1st.

Green Lands Blue Waters Conference
November 29 & 30, 2016
Going Green with Conservation-Based Farming: Market-Based Approaches to Promote Soil Health and Water Quality
Keynote Speakers: Bill Buckner, President and Chief Executive Officer, Noble Foundation and Sean McMahon, Executive Director, Iowa Agriculture Water Alliance
Full Registration: $180 (2 days); $130 (Tuesday); $70 (Wednesday)
Register online; for more information contact Michael Gold at 573-884-1448
Website: http://snr.missouri.edu/green-lands-conference/

8th Annual Agroforestry Symposium
January 26, 2017
Enhancing Health, Conservation and Livelihoods:
Medicinal Plants in Agroforestry
Keynote Speaker: Tom Newmark, American Botanical Council
Contact: Gregory Ormsby Mori: ormsbyg@missouri.edu 573-882-9866

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