



K-STATE
Research and Extension

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Fall Forestry Festival

Imagine a beautiful fall Saturday, add a mix of forests, families and children, a dash of good food and environmental education, and you have the makings of the 2011 Fall Forestry Festival.

On October 15, the Rutter family tree farm is hosting this exciting event north of Harveyville, in southeast Wabaunsee County. Located between Topeka, Manhattan, and Emporia, the festival offers outdoor educational sessions targeted toward landowners and natural resource professionals interested in protecting and managing the magnificent natural resources of Kansas.

This year's festival offers a variety of special inter-generational activities for families and children. Led by adult environmental education interpreters, activities include:

- Hiking trails to identify birds, trees, and signs of wildlife.
- Fire safety and pictures with Smokey Bear.
- Sawmill demonstrations – Ron Shumate will cut logs into lumber.
- Horse-drawn hayrack rides by Jim Thompson.
- Woodland animals, furs, and skulls.
- Scavenger hunts.
- Soil tunnel trailer.
- Snacks around the campfire.
- Learning how trees grow.
- Stream exploration.

The backdrop for the event is the 60-acre Rutter family tree farm featuring a beautiful hardwood forest surrounding

Dragoon Creek and thousands of black walnuts and bur oaks the Rutters planted.



Many hands-on activities will give children a chance to experience beautiful Kansas woodlands and wildlife first-hand.

Many of the seed Larry planted have been selected from genetically superior tree sources. The quality and success of these plantings combined with the management of their mature oak-hickory forest has earned the Rutters the 2011 Forest Stewardship Tree Farmer of the Year award. The Rutters also manage another tree farm in Osage County where they have conducted timber stand improvement practices, select harvest, and tree plantings.

Particularly notable is the advocacy Larry Rutter has shown to promote the management and protection of the forests, windbreaks, and other natural resources of Kansas. For years, Larry has served on the boards of the Kansas Tree Program and Kansas Chapter of the Walnut Council and he has been a member of the Kansas Forest Products Association.

Rutter has been a regular contributor to articles in the Kansas Canopy newsletter. Following his retirement from the Kansas Historical Society, Larry provided state leadership documenting the history of tree planting in Kansas from the Timber Claims Act to the Prairie States Forestry Project where he presented his findings at the Kansas Natural Resource

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Smoke, Water, Wind, and Drought



Larry Biles, State Forester, Kansas Forest Service.

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Calendar year 2011 finds the Kansas Forest Service involved in many functions typical for the agency, but, most likely for many Kansas residents, unknown functions. For example, several Kansas Forest Service persons have served on forest wildfire suppression teams in Arizona, New Mexico, Colorado, Texas and a 20,000-acre prairie fire on the Cimarron National Grassland in southwest Kansas.

Similarly, a Hutchinson Community College fire suppression team, trained by the Kansas Forest Service provided forest wildfire suppression services in Georgia.

Ironically, at the time those persons were breathing smoke and feeling flames, another Kansas Forest Service person was assisting the State Division of Emergency Management address Missouri River flooding issues in northeast Kansas.

Subsequent to addressing the immediate needs associated with this flood are questions to the agency pertaining to the effect of prolonged flooding on riparian forests and trees in low lying areas of towns and cities. The full affect on trees, shrubs, and other vegetation will not be known for several years, but it is generally believed that tree mortality will follow. Should this forecast be accurate, the state will lose air quality, soil stabilization, and habitat values. Moreover, the flood plain will be inundated with woody debris set for washing against bridges and along railroads and highways during the next flood.

During the fire and flood challenges was the Reading tornado. The agency's functions in regards to this event are both short and long term. First was Kansas Forest Service assistance to the State Division of Emergency Management's Incident Management Team shortly after the

tornado stuck. After life, limb, and structural issues had been addressed, Kansas Forest Service personnel worked with the Federal Emergency Management Agency to: 1) identify trees in need of removal, 2) provide maintenance prescriptions for trees able to be retained, and 3) help the community prepare a tree replacement plan. The latter service came at the request of Reading citizens, the Lyon County Extension Office and State Representative Kuether.

Surrounding all of the above is a growing drought problem across much of the state. Among many other things, this drought prompts tree and shrub health questions. Responses are quite varied as the drought is quite varied.

During a recent trip to southwest Kansas, I was told the area had received only four inches of moisture the preceding 10 months. I was told that the drought began long before 2011. Those messages are easy to believe as most nonirrigated vegetation is expressing drought signs and symptoms.

Plant health questions are increasing east and north of this region. Many of these questions pertain to insects and diseases with bagworms, pine wilt, and scale topping the list routed to my desk. Although I do not have precise information on number and or trends, I am told the university's Plant Health Diagnostic Laboratory is staying quite busy.

Varied services, varied skills, and dedication are what the Kansas Forest Service provides Kansas' citizens. We do our best to be relevant and responsive to local, regional and national issues. Should you have needs for our services please feel free to call or write.

Larry Biles, State Forester, oversees all operations of the Kansas Forest Service.

Atchison Receives President's Award of Excellence

Bob Atchison, Rural Forestry Coordinator for the Kansas Forest Service, was one of three K-State employees to receive the 2011 President's Award of Excellence for Unclassified Professionals. Atchison was recognized for his contributions to the university in the development of the *Kansas Forest Resource Assessment and*



Strategy, now being referred to as the *Kansas Forest Action Plan*. Additionally, he was recognized for his work with the Natural Resource Conservation Service on the Kansas Technical Committee.

Larry Biles, State Forester, oversees all operations of the Kansas Forest Service.



Tree Profile



Shingle Oak

Quercus imbricaria

Family: Fagaceae (Beech family)

Native Range: Indigenous to nine counties, mainly in northeast Kansas, (Jackson, Jefferson, Leavenworth, Wyandotte, Johnson, Douglas, and Franklin), and Elk and Greenwood in southeast Kansas. Kansas forms its western boundary. Also found in Missouri, southern Iowa, Illinois, Indiana, Ohio, western Pennsylvania, central Tennessee, and northern Arkansas.

Mature Height: 50 to 60 feet. Up to 80 to 100 feet on good sites (not Kansas).

Spread: 40 to 60 feet.

Form: Pyramidal to oval as a young tree, round in old age with drooping lower branches.

Growth Rate: Slow to medium (1 to 1.5 feet per year).

Foliage: Simple, alternate, deciduous, elliptic (lance shaped) tapered bristle tip with rounded base. 2.5 to 6 inches long and 1 to 3 inches wide. Leaf margins smooth, toothless not lobed. Dark green glabrous above, pale green pubescent beneath. Petiole 1/4 to 5/8 inch long. Fall color brown to russet red persisting throughout the winter.

Flowers: Early May with leaves. Monecious. Male catkins with hairy greenish brown flowers. Female flowers at the base of leaves on new growth, tri-lobed.

Fruit: September of second year. Acorn cup red brown. 5/8 inch long, nut enclosed half to a third by the red-brown scaled cap. Nearly round, sometimes striped.

Bark, Twigs, Stems, and Buds: Bark is smooth gray when young, nearly black with broad ridges and shallow fissures as it ages. Twigs are dark green or light brown, shiny, slender. Buds are light brown and egg-shaped, sharp pointed, and 1/8 inch long, slightly hairy.

Site Description: Found both in alluvial low wet mesic and upland mesic dry sites. Prefers soils with a pH range 4.5 to 6.0. Occurs in Hardiness Zones 4 to 8. Has intermediate flood tolerance (can stand up to a month of inundation) but prefers well-

drained soils. Intermediate shade tolerance. Tolerates drought.

Insect and Disease Problems: Nothing serious. Infrequent problems with typical red oak insects and diseases.

Limitations: Planting should be limited to the eastern third of Kansas.

Suggested Applications: A good tree for residential, streets, parks, and large areas where size of the tree and acorns are not an issue. Excellent choice for rural settings in eastern Kansas and is found on the Kansas Forest Service Preferred Trees Lists for Northeast and South central Kansas.

Cultivars: None known to this writer.

Wildlife Benefits: Acorns eaten by ducks, quail, wild turkey, squirrels, chipmunks, deer, foxes, and raccoons. Good habitat for a variety of songbirds.

Comments: Not common in Kansas woodlands but popular in urban tree plantings where it is an excellent choice and should be planted more. Derives its name from being a preferred oak by settlers for wood shingles. The wood is of poor quality and not generally used in the forest products industry. It transplants with less difficulty than many oaks. One of the longest-lived oaks in urban situations. Sometimes called laurel oak because the leaves resemble laurel leaves.

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Manual of Woody Landscape Plants, Michael Dirr
Know It and Grow It, Carl Whitcomb
Silvics of North America, Volume 2

Hardwoods, Agricultural Handbook 654

Native Trees, Shrubs, and Vines for Urban and Rural America, Gary Hightshoe.

Bob Atchison, Rural Forestry Coordinator, coordinates rural forestry activities for the Kansas Forest Service.



Shingle oak has proven to be an excellent choice for urban plantings.



Shingle oak has shiny green, lance-shaped leaves that resemble laurel, which is why it is sometimes called laurel oak.



Acorns on shingle oak are round and sometimes striped. It takes 2 years for shingle oak acorns to mature.

The Heat and Drought of 2011

The summer of 2011 was brutally hot for most of Kansas. Temperatures in the eastern half of the state hit the century mark for 20 days, the likes of which had not been felt since 1980.

The western half of the state suffered similarly, however, the west not only sweltered in the heat, they dealt with the continued drought. By July, 50 counties were declared to be in a drought condition. For eastern Kansas, early curing grasses and drought-affected crops may make for a busier than usual fall fire season. Because of early spring moisture, native grass, as well as CRP acres in some areas, grew substantially before the hot weather hit. The result is heavy fuel loads going into the fall.

This weather condition was the result of a huge high pressure dome that settled over the Great Plains. Once the dome was in place, it became self-sufficient; as heat was generated during the daytime causing the soil to dry, nighttime moisture recovery was minimal and every day the situation was compounded. This causes a “desert effect.” Dry soil gains or loses heat more quickly than moist soil, thus warming during the day and cooling at night. It therefore becomes a self-perpetuating heat generator.

As air temperatures rise, fuels get closer to their ignition temperature, so a small fire that starts in fuel at zero degrees Fahrenheit, does not spread as quickly as the same fire would in fuel that is already at 100 degrees. Fuel has to produce flammable gas to burn. Gasification is slower to occur at low temperatures than at high temperatures.

2012 Kansas Arbor Day Poster Contest

The 2012 theme for the Kansas Arbor Day Poster Contest is, *Trees are Terrific ... and Kansas Forests Are Too!* The contest is an artistic competition open to fifth-grade public, private, and home-schooled students across the state.

Included lesson plans focus on the forest resource in Kansas and teaches students how to identify the pattern of forest cover, to identify factors that influence forests in Kansas, and to demonstrate the importance of forest ecosystems. Classroom materials and hands-on activities correlate with Kansas curricular standards in reading, math, science, and social studies. This lesson plan

Another condition that has to be met before cured grass will burn is the fuel must have the moisture removed. A hot, dry atmosphere removes the natural plant moisture more rapidly than a cool atmosphere. The combination of natural curing and high atmospheric temperature will cause the fall fire season to start earlier than normal. In Kansas, fall fires usually start a few days after the first killing frost and last for about 2 months. As we go into the late fall and winter, the humidity rises and wildland fire occurrences decrease.

Fire in drought-stricken grass comes with its own challenges; recent events have reminded me that the smoke generated from “green” grass is much thicker and has an “acidic” affect on one’s eyes and lungs. Attacking a late summer grass fire can be as difficult as the spring fire, but for different reasons. While the fire behavior is less aggressive than a similar spring fire, it is still a wind driven event and weather dependent. All wildland fire events are the result of interaction between several variables including fuel moisture, weather and fuel load and availability. If any one of these elements change, fire attack is altered.

So, what will the next several weeks bring in fire suppression? If weather conditions remain dry, the fall wildland fire season could be active or with good wetting rains, it could be very normal.

Ross Hauck Fire Management Coordinator, directs fire management activities for the Kansas Forest Service.

can be used as a supplement to science units on plants, ecosystems, and biomes.

Electronic educator lesson plans for the 2012 contest are available from the Kansas Forest Service at www.kansasforests.org/community/arborday/postercontest.shtml.

For more information contact your district/community forester (www.kansasforests.org/staff/index.shtml), or Kim Bomberger at (785) 532-3315, kbomberg@ksu.edu.

Kim Bomberger, District Community Forester, provides technical assistance, education, and training to Kansas communities in northeast and north central Kansas.

Assessment Team Headed to Cherokee County

The Kansas Forest Service will be taking its riparian forest assessment and best management practice targeting tool to the southeast corner of the state to restore properly functioning riparian areas within the once heavily mined area.

Cherokee County, part of the historic Tri-State mining district, has seen its riparian areas negatively affected by decades of zinc and lead mining. Although the last mine within the Tri-State district closed in 1970, mine waste rock, chat, and tailing sites can still be observed in many streamside areas. The debris piles contain significant amounts of hazardous substances such as cadmium, lead, and zinc. The Kansas Forest Service intends to address the affected riparian areas with forestry practices.

The Kansas Forest Service recently received funding to assess riparian forests within three sub-units of the Spring River watershed. The purpose of the assessment is to identify the location, extent, condition, and ownership of riparian forests within the watershed. Knowing this information allows foresters to directly contact landowners and promote the appropriate riparian forestry practices and programs to enhance water

quality and watershed health, as well as private land forest resources.

During the assessment process, the Kansas Forest Service will be working closely with the Spring River Watershed Restoration and Protection Strategy (WRAPS) group. Local buy-in from WRAPS groups is essential for an effective assessment, as these individuals provide invaluable watershed knowledge, as well as critical landowner contacts.

The assessment will, in turn, help the Spring River WRAPS achieve the long-term water quality goals set out in their watershed plan. For more information on the Kansas Forest Service riparian forest assessment and best management practice targeting tool, please visit the riparian forestry section at www.kansasforests.org.

William Beck, Watershed Forester, has statewide responsibility for forestry practices that improve water quality.



Significant amounts of mine debris can be observed within this Cherokee County riparian area. Debris from mining activity may contain cadmium and lead.

Fall Forestry Festival continued from page 1

Conference. Larry often assists with the organization of field days and workshops. He has periodically been a speaker at these events. The award will be presented at the festival and includes an award sign, a walnut plaque, and \$250 gift certificate from STIHL.

At the same time children and families are enjoying their activities, six additional educational venues will be offered for adults. They include creating forests by planting seeds, using tree shelters to increase tree growth while protecting trees from deer damage, caring for woodlands following timber harvest, techniques for reducing stream bank erosion, important bird species of Kansas woodlands, and how to care for young tree plantations. Kansas Forest Service foresters, K-State Research and Extension, Ecotone Forestry and other

natural resource experts will lead the sessions at the festival.



Larry Rutter stands beside a 4-year-old, 15-foot tall walnut tree.

A catered lunch will be offered to all participants and a \$12 registration is required for people 15 years or older. Teenagers and children 14 years and younger eat for free. Register by calling the Kansas Forest Service at (785) 532-3300, by e-mail at lahaller@ksu.edu or going to www.kansasforests.org and clicking on "Calendar of Events."

The Fall Forestry Festival offers an opportunity to enjoy a fall walk in the woods while learning how to protect and sustain the forests and woodlands of Kansas.

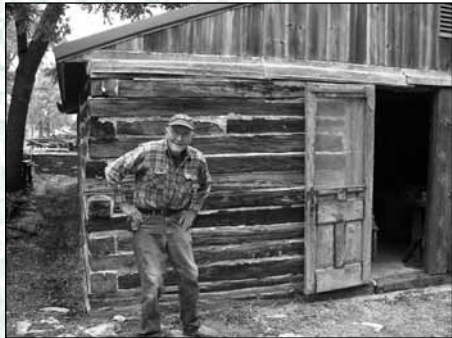
Bob Atchison, Rural Forestry Coordinator, coordinates rural forestry activities for the Kansas Forest Service.



Some of the beautiful mature forests participants will enjoy at the Fall Forestry Festival

Forester Highlight: Thad Rhodes

Everyone has heard the saying “When life gives you lemons, make lemonade.” But what happens when you are handed oranges? Osage-orange is a species that is usually looked on as a “trash” tree, which commonly invades mismanaged pastures, and is thought useful only for firewood and fence posts for those willing to fight the thorns and branches.



Bud Hanzlick standing next to the shed that he made from oak railroad ties.



Kitchen table, chairs and benches that Bud has constructed.



Bud shows the joints that are used in making his furniture.

Once posts have outlived their usefulness, at best, they will be cut up for firewood (and provide practice sharpening your chain saw chain). At worst, and probably more commonplace, they are left to rot. There are a few residents of Republic County, however, who have found a way to think outside of the box and are making the most out of these “lemons.”

Bud Hanzlick of Belleville, has been working with osage-orange for nearly 30 years and can attribute his experience to the Kansas wind and of his wife, Pat. After working as a conductor for the Rock Island Railroad until its dissolution in 1980, Bud said that he and Pat enjoyed spending time together on their porch but did not appreciate the wind wreaking havoc on their plastic and aluminum furniture. One day, a frustrated Pat asked her husband, “Can’t you make something better?” Little did she know what had just been set in motion.

Through many years of practice, Bud has used osage-orange to create rustic furniture, including tables, chairs, benches, coffee tables, headboards, plant stands, shelves, and even a rocking chair from “hedge” fence posts.

While Bud admits that his first efforts at using osage-orange to create wind-firm benches were somewhat crude, the process has been fine-tuned to create impressive and desirable products. Some of Bud’s work has been featured in Robert Redford’s *Sundance Catalog*, and he has received requests for his furniture from around the world.



One of the three original benches that Bud had manufactured to withstand the Kansas wind.

One of the unique aspects of the furniture is that they are made without metal fasteners. Bud says he does not want to ruin the natural character of the material he works with and almost exclusively uses wooden dowels (created from osage-orange) and glue to manufacture the furniture.



A rocking chair that was made by Bud.

Describing the historical value of osage-orange, Bud explains that, “A good hunting bow made of osage-orange was worth a horse and a blanket to Native Americans during trading,” and was



A table and stool constructed by Bud.



Jared "Pete" Gile by some of the furniture that he has made.

mentioned in Coronado's travels. Before the invention of barbed wire, osage-orange was planted and managed as a living fence throughout the state. Bud also referred to a record from the 1890s mentioning that bushels of seed were sold at a tree farm south of Rydal (a community located between Belleville and Scandia).

Two other individuals that have learned to appreciate what "hedge" has to offer are the father/son team of Duane and Jared "Pete" Gile, both of Scandia. After listening to a presentation by Bud Hanzlick at a local church function, Duane became interested in learning the process and trying his hand at it. Focusing on local timber in addition to weathered hedge posts (at least 40 years old), Duane has modeled his work from what he had learned from Bud. Even though he does not build a lot of furniture any more, Duane has passed his knowledge and interest on to Pete.

Pete performs as a traveling musician most weekends and after recently becoming a



A love seat made of osage-orange and eastern redcedar produced by the Giles.

father, is interested in staying close to home and expanding the furniture business. The Giles' construction approach is similar to that of Bud's, where most of the furniture is held together by wooden dowels and glue. One difference, however, is that they are incorporating other local species, including black walnut, green ash, hackberry, eastern redcedar, and bur oak. Several different types of furniture are made, including pub tables and bar stool sets, bars, benches, chairs and love seats. For those who are passing through the area, some of their furniture is on display at Tag's Grill and Bar in Scandia (also a very good place to grab a bite to eat!).

While at first glance, one might think that it would be simple to replicate some of these pieces of furniture, additional inspection proves otherwise. According to Duane, several individuals have approached him wanting to know how the furniture was made and learn the process involved. However, once they find out how much time and labor is involved, they soon lose interest.

No one has ever said that anything worthwhile comes easy. And as a couple of north central Kansas residents are finding out, maybe a Kansas orange is not as sour as a lemon after all.

For those interested in purchasing osage-orange furniture, these featured artisans can be reached at:

Bud Hanzlick
P.O. Box 323
Belleville, KS 66935

Jared "Pete" Gile
www.fencepostfurniture.com
email: pete_gile@yahoo.com

Thad Rhodes, District Forester, provides direct technical assistance to Kansas in 15 north central Kansas Counties for the Kansas Forest Service



A pub table and stool set that was built by Pete.



A wine bar and rack made of osage-orange and oak made by Pete.



A porch swing constructed by Duane Gile.



A stool made by the Giles.

Trees and Naming Kansas Places

Do you ever wonder how a city, town, community, or township was named? What about a river, creek, or other natural feature or landmark? The study of place names can prove not only interesting for the inquisitive but also educational for those who seek knowledge about our state.

Literature about this topic can be located from numerous sources. While frequently referred to as a “prairie” state or as so designated as part of the “Great American Desert” on 19th century maps, it was not completely devoid of trees, timber, or woodland as attested by place names of trees or names associated with trees.

Trees rightfully fall under the descriptive category of place names. Other general categories include commemorative and transfer. While descriptive names are generally self-explanatory and leave little to guesswork, the transfer and commemorative categories requires more research and study.

Yes, Kansas has place names that depict the prairie and open spaces, i.e. Pretty Prairie and Plainview, but it likewise has those that convey descriptive names such as Woodbine and Sycamore. The descriptive name of *prairie* has been one of the most popular names, appearing as just prairie or in combination with other words in 67 place names in Kansas.

Comparing *prairie* in terms of usage with that of the word *walnut*, however, leaves one to wonder if Kansas is truly a prairie state. For example, the word *walnut* appears in 63 place names in this state where black walnut trees thrive. There are 27 Walnut Creeks alone in Kansas. Walnut is just one tree species – what about mulberry, elm, and oak?

The cedar tree, or eastern redcedar, our only native coniferous tree species,

warrants a comment. It grew and continues to grow in the state. Yet its frequent sighting in the early period prompted it to be used for the name of 13 post offices and – according to *Kansas Geographic Names* – 19 Cedar Creeks and 13 Cedar Bluffs. If one were to combine all the tree species into one category of place names it would far exceed the 67 that use the word *prairie*!



Many Kansas rivers have been named for the trees that have grown adjacent to them

Early traders, trappers, explorers, military expeditions,

and settlers were extremely influential in providing place names that were descriptive – much credit must go to them.

Take the city of Leavenworth for example. It is recognized as the first incorporated city in Kansas Territory in 1854. Its city leaders and planners not only named many of their streets and roads after Native Indian tribes, but also after many species of trees. How many other cities and communities did likewise?

Place names are ubiquitous and are so commonplace that they are taken for granted in most instances. So, the next time you and an acquaintance, colleague, or friend are wanting to discuss whether Kansas is a prairie state or not, with few or a scarcity of trees, it would be appropriate to remind them that one should consult the place names that we possess today before making a definitive determination.

Sources

Kansas Geographic Names Alphabetical Finding List, 1981.

Van Meter McCoy, Sondra and Hults, Jan, *1001 Kansas Place Names* (University Press of Kansas, 1989)

Larry Rutter is a member of the American Tree Farm System and serves on the Kansas Tree Farm Committee and the Kansas Chapter of the Walnut Council Board.

Fall Containerized Sales Begin Soon

This fall, the Conservation Tree Planting Program will offer containerized seedlings for sale and distribution for the 7th straight fall season. Orders will be taken September 6 through October 14.

If soil moisture is adequate, fall is a great time to plant seedlings. Planting in the fall allows the seedling to get established before winter. The seedling will have the advantage of starting growth during the optimum growing conditions in the spring.

The species offered this fall will be a good supply of evergreens, eastern redcedar, Ponderosa pine, southwestern white pine, Austrian pine, Colorado blue spruce, and Pinyon pine. Deciduous species, available in limited supply, will include redbud, bur oak, English oak, pecan, sawtooth oak, swamp white oak, and a shrub, fragrant sumac.

The prices are \$50 for 25 seedlings. All the seedlings must be used for a conservation purpose. Most of the seedlings sold are used in windbreaks, but other uses include wildlife habitat planting, riparian planting (erosion control), wood lots and Christmas trees.

It is always best to plant the seedlings immediately when they are received, but with proper care they can be held for several weeks. The seedlings can be stored upright in light shade and protected from the wind. Saturate the root plug with water three times a week. Do not store the seedlings on the ground as the roots will quickly grow into the soil. Watering the

seedlings after planting, and for a couple of years afterward or until the seedlings are established, is essential if soil moisture is not adequate. The amount and frequency of watering will vary depending on the soil type, wind velocity, and temperature. Irrigate by saturating the root zone and then let it partially dry out as this will promote soil aeration and root growth.

Fall planting can be just simply planting replacements from a previous planting or a completely new planting. If a fall planting is not on your mind at this time or you are not prepared for a fall planting but a spring planting is; now is a good time for site preparation for next spring. Site preparation is critical to the survival of tree and shrub seedlings. Any vegetation competes for moisture and nutrients. The more preparation before a planting and care after a planting will help to ensure successful establishment of the seedlings.

Additional information and assistance to establish conservation tree planting are available from the Kansas Forest Service, K-State Research and Extension offices, Natural Resource Conservation Service offices, County Conservation District offices and Kansas Department of Wildlife, Parks and Tourism offices.

Mark Haller, Conservation Forester, manages the Conservation Tree Planting Program and related activities for the Kansas Forest Service.



Fall can be a great time to plant trees.

Groups Present Poster to Kansas Governor



In April, representatives from a variety of forestry and arboricultural organizations celebrated Arbor Day and the International Year of the Forest with Governor Sam Brownback at the State Capitol in Topeka. A framed poster of the Kansas state tree, eastern cottonwood, was presented to Governor Brownback.



Forest Insect and Diseases to Watch for This Fall

Shoestring root rot, *Armillaria mellea*

You may notice this in oaks. The wood decays at the base of the tree and black strings (rhizomorphs) may be visible under the bark. During the fall season, yellow or tan (orange) mushrooms can be seen. When removing these trees, include the butt and larger roots. Do not replant at the same site.

Needle blight, *Dothistroma pini*

Needle blight is a serious disease on Austrian and Ponderosa pine. Mugo pine is also susceptible, but Scots pine is considered resistant. Early symptoms, seen in late summer or early fall, include green bands or yellow tan spots scattered on one-year old needles. Spots often enlarge into red bands that encircle the needles. Needles then turn yellow from the band to the tip. Black fruiting bodies form in the band during late winter or early spring and summer.



Walnut caterpillars can cause heavy defoliation, however, outbreaks are infrequent and tree mortality is rare. Chemical control is usually not necessary and may be harmful if parasites and predators are affected.

Sanitation of fallen needles may be helpful, but chemical treatment is necessary for good control. A single application of a copper-containing fungicide in early June will normally protect the tree, but two applications, one in mid-May and one in mid- to late-June, may be more effective. For more information, refer to K-State Research and Extension publication L722, *Pine Diseases in Kansas: Tip Blight, Dothistroma Needle Blight, and Pine Wilt*.

Natural Needle Drop

Pine, spruce, and various needled evergreens naturally drop needles during the fall. Two- to four-year needles on the inside of the tree turn yellow then brown and fall off. Needle shed is more prevalent with stress caused by heat and drought. This is a natural occurrence rather than a disease problem.

Pinewood nematode,

Bursaphelenchus xylophilus

Scots pine is more susceptible than Austrian pine. This produces sudden death of trees. There is also a lack of resin flow from infected trees. The infection may begin in the spring and kill the tree by fall. Remove and destroy infected trees. This eliminates breeding wood for the insect vector. No chemical controls are labeled.

Rhizosphaera Needlecast,

Rhizosphaera kalkoffii

This affects spruce species. Fuzzy black growths are visible on needles in late fall or

early spring. One- and 2-year-old needles on lower branches turn purplish-brown in summer and are usually shed by late fall. Apply chlorothalonil when needles are half-elongated and again when needles are fully elongated.

Fall Webworm, *Hyphantria cunea*

Currently, the second generation of fall webworm caterpillars (larvae) is apparent and will be noticeable until late September. The caterpillars feed on many tree species: hickories, maples, pecan, and walnut. They feed on almost all fruit, shade, and ornamental trees except conifers by creating silky webbing that encloses the ends of branches/foliage. Remember these differ from the Eastern tent caterpillar because the larvae stay within their webbing. The fall webworms will consume all the foliage within the webbing, leaving bare branches. To control the caterpillars, prune out the webs or simply open the webbing for natural enemies to attack the larvae.

Twig Girdler, *Oncideres cingulate*

Elm, hickory, oak, linden, hackberry, apple, pecan, persimmon, poplar, sour gum, honeylocust, dogwood, and some flowering fruit trees are attacked by this common beetle. Late in the growing season, the female deposits eggs in small scars where it has chewed through the bark and then chews a continuous notch around the twig, girdling it. The notch is cut below the site of egg deposition apparently because the larva is unable to complete development in the presence of large amounts of sap. Twigs (up to 3 feet long) can be girdled and remain on the tree until sufficient wind dislodges them. Large infestations can result in a high percentage of twigs being girdled. Though this may reduce the vigor and overall appearance of the tree, the overall effect on the tree's health is not severe. However, the twigs are unsightly and do not fall all at once so cleanup is a drawn out process.

For more information

Kansas Forest Service –
www.kansasforestservice.org

Refer to the following K-State Research and Extension publications: *Tree Diseases of Kansas*, C674
Insects and Mites Associated with Shade Trees and Woody Ornamentals, S85.

Nicole Ricci, Forest Inventory/Forest Health Specialist, statewide responsibility for forestry inventory and forest practices that improve forest health.

Woody Biomass Source of Energy and Available Energy

Conversion Technologies

Wood for energy promotion activities through the Kansas Forest Service are up and running. We provide technical assistance for facilities considering woody biomass as a source of energy. Engineering feasibility assessments are available to show the potential economic benefits of switching fuel sources from fossil fuels to woody biomass.

The Kansas Forest Service analyzes interested facility's energy system in terms of woody biomass availability, energy demand, and heating distribution arrangement. The Kansas Forest Service has made preliminary assessments for more than 10 facilities in Kansas.

Based on a 2009 wood-waste survey report by the Kansas Forest Service, opportunities for establishing wood-energy projects are primarily in northeast Kansas to south central to the southeast area. This report not only reflects the wood waste availability, but also reflects the existing native forest wood resources in Kansas. Sustainability of woody biomass sources makes sense in dark green highlighted county zones in Figure 1.

A variety of technologies can transform wood into energy for residential, commercial, and industrial uses. The wood can be used exclusively or in combination with other fuels, such as coal or natural gas. Wood energy can be used to generate electricity; heat buildings with water, steam, or air; and produce steam for industrial processes. All of these processes involve breaking down the cellulose in wood to release the energy it contains.

Technologies for converting woody biomass to energy

Direct Burning

Energy from burning wood can produce power, electricity, or heat. The most effective way to use woody biomass for energy is to combust it efficiently. Combustion systems include boilers or other combustors, plus

any emission control equipment as well as in plant fuel preparation equipment.

Many facilities use wood particles of consistent size, such as wood chips to create steam. In some cases, steam is used directly to power machines or to heat buildings. Additionally, steam can be used to turn turbines, which generate electricity. This electricity can be used onsite to power machinery, or it can be sold to the power grid. Some facilities use steam first to turn a turbine and then for heat. This is called co-generation because two forms of energy are generated from one process.

In Topeka, Frito Lay is generating steam from local sources of wood waste to power portions of a food production plant. Early estimates indicate that Frito Lay will use 40,000 tons of wood chips annually. In comparison to the overall supply of wood waste materials available in Kansas, this demand is relatively insignificant.

Converting into Gas

Woody biomass can be converted into a synthesis gas (syngas) through gasification. It can be made into biogas through the process of anaerobic digestion.

Gasification exposes wood to extremely high temperatures (1,600 to 2,200 degrees Fahrenheit) and pressure in a low-oxygen environment to produce syngas, a gas made up of carbon dioxide, carbon monoxide,

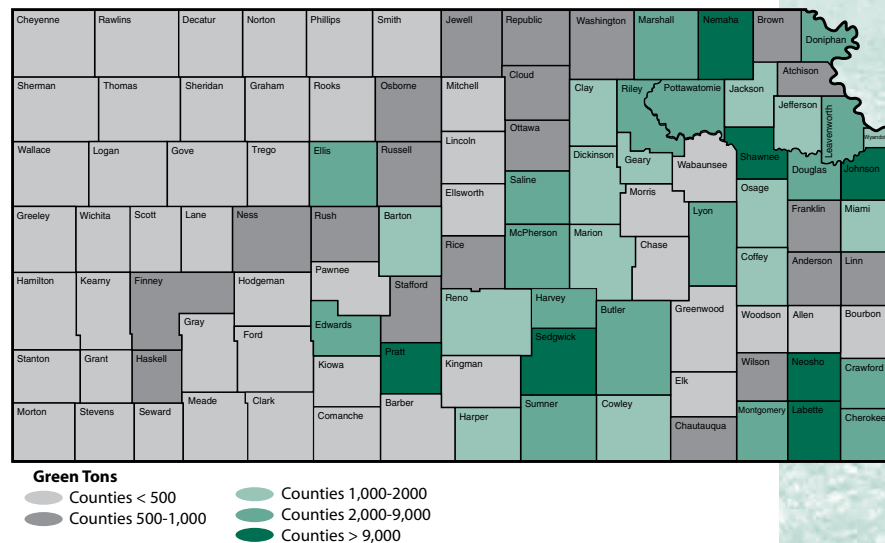


Figure 1. Wood Waste Supply, 2009.

continued on page 12

and hydrogen. Syngas is combustible and can be used as a fuel source.

Anaerobic digestion exposes wood to bacteria in the absence of oxygen to produce biogas, a type of fuel produced from biomass materials.

In both processes, a gas is produced as the cellulose is broken down. Syngas and biogas can be used like natural gas for cooking, heating water or buildings, or producing electricity.

Converting Wood into Liquid Oil

Wood can be made into a liquid oil, called bio-oil, by heating it quickly in the absence of oxygen. This process is called fast

pyrolysis. In addition to producing liquid oil, this process produces char and a combustible syngas.

Bio-oil can be burned in boilers to heat buildings or in generators to produce electricity. Since the bio-oil contains a much higher amount of energy per unit volume than wood, it is cheaper to transport than wood. The pyrolysis syngas can be used much like natural gas.

The char can be processed into briquettes for grilling, used to purify metals, and as an additive to fertilizer. A portable pyrolysis process plant is under construction in Chanute, Kan. The Kansas Forest Service is considering a market assessment of by-products (gas, oil and char) from the wood pyrolysis process.

Converting Wood into Transportation Fuels

Wood can be used to produce transportation fuels, such as ethanol, methanol, or biodiesel. Ethanol is produced through a process called fermentation in which wood is exposed to microorganisms.

As these microorganisms decompose the wood, enzymes are produced. These enzymes trigger a chemical reaction that

exposes and breaks down the sugars in the wood. Microbes can then be added to the sugar solutions to convert them into the colorless alcohol ethanol and other by-products.

Once processed, ethanol can be used in combination with gasoline to make E-10 or E-85 to power vehicles. E-10 contains 90 percent gasoline and 10 percent ethanol and can be used in most vehicles; E-85 contains 15 percent gasoline and 85 percent ethanol and can be used in engines modified to run on higher concentrations of ethanol, often referred to as flexible-fuel vehicles.

Another liquid, methanol, can be produced from woody biomass. When woody biomass is gasified, the resulting gas can be converted to a liquid. Methanol can be used to fuel vehicles or to produce other chemical products. This is one method of producing methanol. Currently, most methanol is produced using natural gas.

Additionally, biodiesel is a liquid fuel that can be used to power machinery and vehicles. In a process called alcoholysis, oils extracted from wood are combined with alcohol and a catalyst to produce a renewable diesel fuel. Thanks to relatively new technological breakthroughs, woody biomass can provide the substances needed to manufacture renewable diesel fuels on a larger scale.

References

Food and Agriculture Organization (FAO). 2004. Unified bioenergy terminology: Definitions of main terms. <ftp://ftp.fao.org/docrep/fao/007/j4504e/j4504e00.pdf> (accessed August 4, 2011).

School of Forest Resources and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date June 2009. Reviewed February 2011. Visit the EDIS website at <http://edis.ifas.ufl.edu>.

Jessica Tomasello, outreach research associate; Lauren McDonell, outreach research associate; Martha C. Monroe, professor; and Annie Oxarart, outreach research associate, School of Forest Resources and Conservation, University of Florida.

Sabina Dhungana, Woody Biomass Specialist



A relatively small amount of wood waste is currently used in Kansas and 67 percent is ready to be used in a processed form through chipping or grinding.

Overlooked Street Trees for Kansas

Chinkapin oak, *Quercus muhlenbergii*:

A Kansas native found in the eastern one third of the state, which can be planted throughout the state. This tree has one of the widest native ranges of the oak species.

It is generally considered an upland, dry species and is intolerant of wet sites. It is drought tolerant and is adaptable to alkaline/limestone Kansas soils. It has few or no pest or environmental problems.

Chinkapin sets acorns early. Its acorns are a favored choice of turkeys and deer. The acorns are the first to mature in the fall and are considered the most palatable due to their low level of tannin.

This tree can be tough to transplant, so I recommend moving it at a young age.



Chinkapin oak.

White oak, *Quercus alba*:

White oak has a huge native range and appears in every state east of the Great Plains. Native to Kansas, it is found mainly in the northeast portion of the state, in just a few counties. This tree looks similar to the bur oak, with an advantage of red fall color. Another advantage over bur oak is that it produces a smaller acorn.

White oak is tolerant of alkaline soils and fairly drought tolerant, but prefers moist but not excessively wet soils. The one major problem in Kansas would be its susceptibility to oak wilt.

I think we need to plant more white oak in the eastern half of the state and try it in the west. This tree can be difficult to transplant and I recommend moving it at a young age.

Shumard oak, *Quercus shumardii*:

Native to the eastern one-third of Kansas; larger populations exist in the southeast corner of the state. Shumard can be found in lowland areas, but is not uncommon in upland soils.

When driving in southeastern Kansas, you can differentiate Shumard from pin oak by its lower branches being more horizontal versus the pin oak descending in form.

Shumard is fairly fast growing and tolerant of alkaline soils. It is suitable to both moist and dry sites. Tolerant of summer heat and drought, it is sometimes referred to as a southern red oak. Other advantages are a small acorn and usually good red fall color



White oak.



Shumard oak.

Kentucky coffeetree, *Gymnocladus dioica*:

Another native to Kansas found in the eastern one-half of the state. Typically found in the lowland soils, but many times it can be found in the upland soils and can be both moisture and drought tolerant. There are no pest or environmental issues with this tree.

This tree is dioecious, which means that there are separate male and female trees. There has been some work on selecting the male fruitless tree, and one such cultivar is 'Espresso'. I like the fruit for winter interest, but since this article is about street trees I would use male or male clones of the coffeetree for street tree planting.



Kentucky coffeetree.

Hardy rubber tree, *Eucommia ulmoides*:

I have only seen a few of these, but they always stand out in the heat of the summer, as they look great even after the worst of summer.

I have seen this tree at the Pair Center, Riggs Arboretum, and Linwood Park in Wichita. In Linwood Park, they have both



Hardy rubber tree.

a male and female tree and we have collected viable seed from these trees. Introduced from China in 1896, this tree is not native to the United States. The one at Riggs was planted in 1901 and is possibly among the oldest in the United States.

The fact that this tree is exotic is not a concern as I have stated many times that one of the best ways for us to increase the diversity of the urban landscapes is through the use of exotics. Our largest caution of the use of any exotic would be to rule out invasive types.

Miyabei maple, *Acer miyabei*:

This tree is not as well-known as hedge and shantung maple, but is catching on quickly, as it is one the hardiest of the maples.

The leaf is close to that of hedge maple, but lacks the golden fall color and does mature to be a larger tree. This tree adapts to various soil types and environmental conditions. It has no pest issues. There has been some cultivar selection and the release of State Street maple and Rugged Ridge maple.



Miyabei maple.

London planetree, *Platanus spp.*:

This is a fast-growing tree that is not considered weak or brittle. Its only downfall could be large leaves. This tree maintains a good central leader on its own without guidance. I continue to be impressed with its lack of damage after ice and wind storms. Very adaptive to soil types and is both drought and moisture tolerant. With the exception of lacebug damage, there are not a lot of pest or environmental issues.



London planetree.

Baldcypress, *Taxodium distichum*:

This tree has been available for a long time, but I still consider it underused. Native to the lower east coast and the lower Mississippi River Valley, it also is found in eastern and southern parts of Texas.

I have stated for a few years that we need to use more baldcypress as boulevard trees. They are tolerant of both wet and dry

soils, are fast growing, can be readily limbed up for clearance, look great in groves, and are fairly pest free. Spider mites and bagworms have been periodic issues. Some people mention the fruit as being messy when used as a boulevard tree. The species is not very tolerant of alkaline soils. But, for many years you have heard Jason Griffin and myself speak about baldcypress that grow along the Frio River in Texas and that it is adaptive to 8 plus pH soils. This particular tree should be considered for western Kansas.



Baldcypress.

Caddo maple, *Acer saccharum*:

Caddo maple is a Southern Plains provenance found in the Caddo County area in Oklahoma. This southern sugar maple has adapted to possess a thicker leaf that is more tatter resistant and provides more drought tolerance. The John Pair Horticulture Center has two cultivar releases from their seedling trial of sugar maples. They are: 'John Pair' named after the late Dr. John Pair and 'Autumn Splendor'.

'John Pair' is a perfectly round shaped tree that consistently turns red early in the fall.



Caddo maple.

This tree was selected for its red fall color and the fact that it changes color so early every fall.

'Autumn Splendor' was selected as a typical orange-yellow-red mix of fall color and more of an upright form. It is also consistent in early fall color. Some seedling-grown Caddo maples may show very little fall color. There may be a range of these thick leafed maples in Chautauqua Hills area, near Sedan.



New Harmony American elm.

New American Elms, *Ulmus americana*:

The species of American elm has probably the largest native range of any plant and virtually covers the eastern one half of the United States. Of course we lost, and continue to lose a lot of American elms to Dutch elm disease. The newer releases of the American elm are Dutch elm disease resistant and many were found as the only survivors in areas devastated by the disease.

As with most elms this species is extremely adaptable to all soil types and environmental conditions.

To name just a few of the more popular American elm cultivars: 'Jefferson', 'New Harmony', 'Princeton', and 'Prairie Expedition'. One American elm that has fallen out of favor is the fast growing



Emerald Sunshine elm.

'Valley Forge', which requires too frequent pruning as a young tree to maintain good structural integrity.

Elm Hybrids, *Ulmus* spp.:

Elm hybrids are just that, they are hybrid crosses between two other elm species and sometimes crosses of more than two species or cultivars. Even after the scorching summer, the elm species in general are among the best trees to tolerate whatever Kansas throws at them. I have started to see the various elm hybrids starting to be planted in tree pits to community parks and would encourage you to give them a try. Once again there are a number of cultivars, but I will name a few that we see as promising: 'Frontier', 'Homestead', 'Pioneer', 'Patriot', 'Accolade', and Triumph

The next time you are in the Wichita area, stop by the Pair Center in Haysville to view the elm trial. It is one of 18 sites in the United States.

Just to add a couple of promising elm cultivars: 'Emerald Prairie' Lacebark elm is a selection that was released by the Pair Center from the lacebark elm trial. Emerald Sunshine elm is a cultivar of *Ulmus propinqua* that Steve Bieberich of Sunshine Nursery brought back from China and selected with J Frank Schmidt Nursery. I would also add a couple oak species: English oak and swamp white oak. Our state champ English oak is actually a street tree in Kinsley and swamp white is both drought and moisture tolerant.

Tim McDonnell, Community Forestry Coordinator/District Community Forester, coordinates community forestry activities and provides educational and technical services for communities and green industries in southeast and south central Kansas.



Frontier elm.



Accolade elm.



Swamp white oak.

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Links of Interest:

Kansas Forest Service
www.kansasforests.org

K-State Research and Extension
www.ksre.ksu.edu

State of Kansas
www.accesskansas.org

Kansas Department of Wildlife and Parks
www.kdwp.state.ks.us/

Natural Resources Conservation Service-Kansas
www.ks.nrcs.usda.gov/

Farm Service Agency-Kansas
www.fsa.usda.gov/ks/

Calendar of Events

September 6 - October 14 – Fall Conservation Seedling Sales. (888) 740-8733, or place orders www.kansasforests.org/public_saps/Welcome.aspx

September 27 – Kansas Prescribed Fire Council meeting, Manhattan. Farm Bureau Building. 9:30 a.m.. Contact Jason Hartman, (785) 532-3316 or hartmanj@ksu.edu

September 30 – Water and the Future of Kansas Conference, Topeka.
www.dce.k-state.edu/conf/waterfuture/

October 15 – Fall Forestry Festival, Harveyville. Contact Bob Atchison, (785) 532-3310 or atchison@ksu.edu

November 17 – Kansas Forestry Association Board and State Forest Stewardship Coordinating Committee Meeting, Topeka. Contact Bob Atchison, (785) 532-3310 or atchison@ksu.edu

January 26-27 – Kansas Natural Resource Conference, Wichita. Contact Thad Rhodes (785) 776-5182, Ext. 1517 or trhodes@ksu.edu

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