

**MANHATTAN PLANT
 MATERIALS CENTER**
 Manhattan, Kansas



Brrrr!!!!

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The stately American elm

Switchgrass Used for Construction of "Arbor" Shelter

Shelters constructed of willow poles and native grasses were a way for the Caddo Indians of Louisiana's Red River Valley to escape the relentless heat of the summer sun. A replica of one of these traditional structures stands at Haskell Indian Nations University in Lawrence, Kansas.

The arbor was completed in early November by students, faculty, and friends of the university as an environmental project funded by the U.S. Army. The Army is interested in using switchgrass for its ability to heal damaged terrain and help limit soil erosion. "In the Army, we are really interested in using switchgrass for

erosion control in training areas, and if you mix it with other grass species, you get a really good, solid erosion control system" said Bill Severinghaus, Technical Director of the U.S. Army Construction Engineering Research Laboratory (USACERL) of Champaign,



Crew constructs switchgrass structure on Haskell campus.

Illinois. "It was hoped that if Army installations would restore their lands using

switchgrass, then tribes could come to the forts and harvest the switchgrass for cultural uses" said Lorene Williams, Haskell English Professor and Principal Investigator on this project. The student interns of the Native Grass Research Project at Haskell's Environmental Science and American Indians Studies programs examined the cultural and scientific aspects of switchgrass. As part of Haskell's Native Grass Project, faculty and students spent time analyzing switchgrass use across the U.S. and found the Caddo people typically used it for building homes and shelters. Williams indicated that students working on the

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American Elm Makes Comeback

The American elm (*Ulmus americana*) makes a comeback thanks to John Hansel and the Elm Research Institute (ERI) which he founded. This beautiful tree once lined city streets in most every city and town in the United States. American elm was the ideal shade tree. Long lived, it is capable of attaining heights to 100 feet with a vase-shaped canopy. In 1930 elm bark beetles were inadvertently

introduced into the U.S. in a shipment of beetle-infested elm logs. These beetles carried a fungus which infected susceptible trees to Dutch elm disease (DED). The fungus wreaks havoc on the elm by spreading to the water-conducting vessels of the tree prohibiting the flow of water and nutrients.

The oldest American elms dated back to the 1700's, but by the 1960's most of them had to be cut down and

destroyed because of DED. It is estimated that more than 100 million American elms succumbed to Dutch elm disease. ERI developed a preventative injection which was approved by the Environmental Protection Agency in 1975, in an effort to save the remaining elms. Perhaps their greatest effort has been in the development of a disease-resistant strain of American elm.

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An American elm displaying flagging and being sampled for Dutch elm disease. (photo by: R. Childs)

“Lippert has shown adaptability to the drier climates.”



Acorn production on 10-year old bur oak at Tribune, Kansas

American Elm Makes Comeback continued from page 1

Following some 40 years of research, American elms that are resistant to DED have appeared on the American landscape thanks to the work of the ERI and the University of Wisconsin. Researchers at ERI found DED resistant trees by injecting surviving trees with DED. Investigators found that the reason these trees survived DED was due to their smaller cell structure which prevented the disease from entering the tree. ERI named its

disease-resistant tree Liberty which is actually a group of six different cultivars all of which are DED resistant. ERI produces clones of each cultivar and mixes them so that each shipment of elms differs in its genetic make up. This ensures that if a new disease or problem comes along some of the trees might survive. The elm has been “street tested” for over 20 years now. No known American elm variety is 100 percent

disease resistant; However, the Liberty elm is extremely resistant to DED. ERI is so sure of its product that each tree comes with a lifetime warranty. If an American Liberty elm is lost to DED, it will be replaced for free. For more information on American Liberty elm, visit www.landscapeelms.com or call the ERI at 800-367-3567.

‘Lippert’ Bur Oak Shows Potential in the Western Great Plains

‘Lippert’ bur oak, *Quercus macrocarpa* (Michx.), is a seed propagated cultivar recommended for conservation use in multi-row windbreaks, reforestation for watershed protection, and wildlife habitat plantings.

Lippert was released in 1994 by the Manhattan PMC in cooperation with Kansas State and Extension Forestry.

Lippert is a broad leaf, deciduous tree with deeply furrowed bark and bright green foliage making it an attractive tree for farmsteads. It is a medium-to-tall tree reaching a potential mature height of 100 feet. The fruit is an acorn up to two inches long, half to entirely enclosed in a distinctive fringed cup. Its acorns provide valuable food for many animal species.

The full area of adaptation of Lippert remains unknown. Initially, adaptation included most of Oklahoma, eastern Kansas, and eastern Nebraska. For the past 10 years a field planting of Lippert has been monitored at the Kansas State Extension Farm west of Tribune, Kansas. Annual rainfall in this area is approximately 17 inches. Lippert is doing extremely well in this low moisture environment. The last three years these trees have produced acorns. Lippert has shown adaptability to the drier climates of the western parts of Oklahoma, Kansas, and Nebraska.

Lippert bur oak has proven to be a hardy deciduous tree adapted to climates throughout the region. Unfortunately, efforts to get the cultivar

into the nursery trade have been unsuccessful. Recently, state nurseries in the region have shown an interest in producing Lippert for future tree plantings.

For additional information about Lippert bur oak, contact the Manhattan PMC at 785-539-8761 or Mark Janzen, Plant Materials Specialist at 785-823-4595.

According to the National Register of Big Trees, removal of a bur oak tree 60 feet tall and 105 feet wide with a circumference of 322 inches would cost \$3456.39 to replace the storm water control service it provides. This same tree removes 19.56 pounds of nitrogen, sulfur, ozone, and particulate matter every year.

~www.americanforests.org

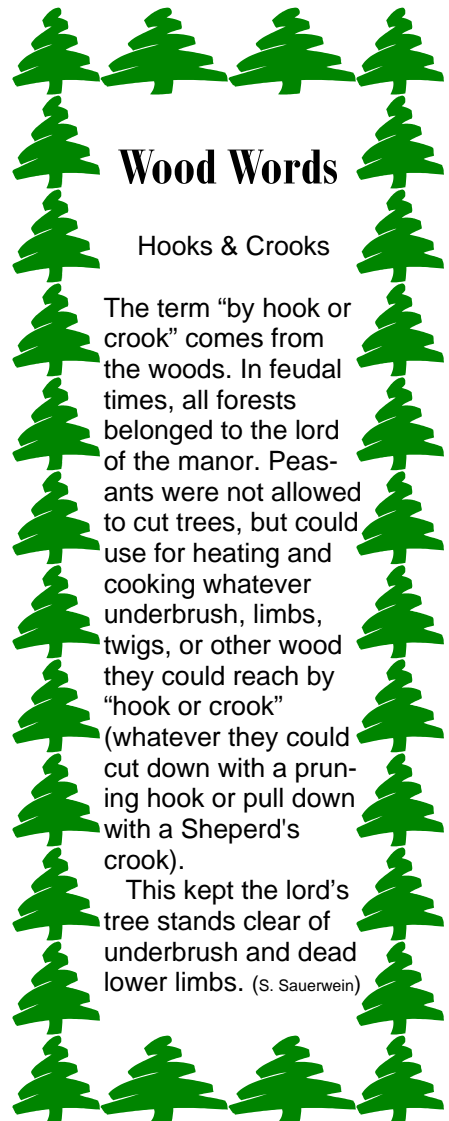
Switchgrass Used for Construction of “Arbor” Shelter

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project had gained a new appreciation of their heritage.

Phil Cross, a member of the Caddo tribe, was the engineer and construction boss for the project. Cross indicated that his tribal ancestors would work very quickly to build an arbor shelter and put one up in a few hours. However, it took the inexperienced group working part time about a week to finish the project. The grass bundles for the arbor came mainly from the nearby Baker-Haskell Wetlands and were selected, cut, bundled and bound by Haskell students. Manhattan Plant Materials Center staff members Alan Shadow, Soil Conservationist; and Rich Wynia, PMC Manager, harvested some bundles of switchgrass from the PMC and participated in the initial ring of grass being attached to the framework of the shelter. Elementary Education major Tiffany Wisdom was among the many students from the American Indian Studies Program who helped cut and bundle the grass, watching and learning the construction process from the beginning. Wisdom watched as Charles Allen, a Louisiana botanist and author, and others pieced together the willow pole framework that would eventually support the grass walls of the arbor shelter. Allen indicated that switchgrass was valued by the Caddo Nation and other tribes because of its resiliency in all seasons and weather conditions. Williams stated, “Switchgrass is a very durable grass. It’s very strong and once the grass is harvested and placed in overlapping rows on the structure it is water proof.” Allen stated that switchgrass is a hardy species of grass that is common throughout the Great Plains. It is one of the four grass species that define the tallgrass prairie. The other species are big bluestem, little bluestem, and Indian grass.

The arbor shelter, which is about eight feet tall, is outside the Eric Allen Greenhouse on the south side of the campus. A few dozen species of tall warm-season grasses are also growing in and around the greenhouse behind Tam-I-Nend Hall on the Haskell campus. The arbor will be used as a social gathering place and for classroom purposes.



Wood Words

Hooks & Crooks

The term “by hook or crook” comes from the woods. In feudal times, all forests belonged to the lord of the manor. Peasants were not allowed to cut trees, but could use for heating and cooking whatever underbrush, limbs, twigs, or other wood they could reach by “hook or crook” (whatever they could cut down with a pruning hook or pull down with a Sheperd’s crook).

This kept the lord’s tree stands clear of underbrush and dead lower limbs. (S. Sauerwein)

Mead’s Milkweed Subject of Symposium

Mead’s milkweed (*Asclepias meadii* Torr.) is an endemic species whose natural range was eastern Kansas, Missouri, Illinois, and Iowa. It occurs on dry-mesic to mesic tallgrass prairie sites. Since the introduction of the plow, the species’ habitat has been dramatically fragmented. The species today is found primarily on prairie sites with soils too thin for cultivation and not being grazed by cattle.

Almost all of the sites are hayed annually limiting sexual reproduction of the species. The species has been extirpated from parts of its historical range due to agricultural practices, urban sprawl, industrial, and commercial development. The most recent surveys indicated that only 171 extant populations exist in 34 counties in eastern Kansas, Missouri, and south central Iowa. The U.S. Fish and Wildlife

Service (USFWS) listed Mead’s milkweed as a threatened species in 1988. This past November, the Kansas Biological Survey and the University of Kansas Field Stations and Ecological Reserves hosted a symposium devoted to the ecology, evolution, and conservation of the rare prairie plant: Mead’s milkweed. There were numerous presentations concerning research that is

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**SEEKING VEGETATIVE SOLUTIONS
TO CONSERVATION PROBLEMS**

The mission of the Plant Materials Program is to develop and transfer state-of-the-art plant science technology to meet customer and resource needs. The primary products produced by the program include the production of improved varieties of plants for commercial use and the development of plant science technology for incorporation into the electronic Field Office Technical Guide (eFOTG).



Mead's Milkweed Subject of Symposium *continued from page 3*

being conducted on the milkweed. One emphasis focused on improving monitoring protocols on the Rockefeller Prairie site near Lawrence, Kansas. One of the invited speakers was John Row, Plant Materials Specialist, who discussed plant propagation and establishment work going on at the Manhattan PMC. The event was attended by about 45 people. Attendance included scientists, graduate students, landowners, prairie enthusiasts, and agency personnel such as the USFWS.



Mead's milkweed flowering on a study site at the Manhattan PMC

Perhaps the greatest threat to Mead's milkweed at this point is

encroachment on the remaining species' habitat by residential development. The possibility of land acquisition, conservation

easements, and reestablishing Mead's milkweed to native prairie sites could possibly lead to delisting the species.

Rural Land Conversion

According to the National Resources Inventory, the average annual rate of rural land converted to developed uses in Iowa, Kansas, and Missouri is 136,580 acres for the period 1992-1997.

~Farmland Information Center

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