

# KSU Tree Walk

## A Self-guided Tour



Kansas State University

Manhattan, KS

Kansas State Agricultural College, the first land-grant college established under the Morrill Act, was founded in 1863 on a 100-acre site northwest of what is now the College Avenue and Claflin Road intersection. The thin and rocky soil was found to be unsuitable for the study of plant growth. The college purchased additional land, and in 1875 moved to its present location.

The new campus had few trees. Several American elms grew along the streams, and red cedars, common hackberries, and honeylocusts were scattered here and there. There was also a 40-acre nursery on the campus. It had been started by the Rev. Elbridge Gale, who became a member of the horticulture faculty when the college bought his nursery. Some of those nursery trees – the silver maples lining Lover’s Lane and Campus Creek – are still visible.

Nearly all the trees on campus today were planted intentionally, yet they amount to less than half of the total number planted. Over the years tree plantings have been reduced by drought, disease, neglect, cold winters, and most important, land acquisition for buildings and parking lots. The trees that remain can be placed in groups according to the reasons they were originally planted.

First, there was the windbreak; a border planted ten rows wide with each row approximately ten feet from the next. Its southern boundary was Anderson Avenue, and it stretched from Midcampus Drive to Manhattan Avenue. The windbreak turned north and followed Manhattan Avenue to Old Claflin Road. The northwest corner of the windbreak was where Bushnell Hall now sits. The western side was a line that connected this northwest point with Anderson Avenue. Today windbreak trees remain north of Anderson Hall, on the west side of Kedzie and Calvin Halls, along Manhattan Avenue.

Other important additions to the campus plantings were the nursery rows and provenance studies. Many of the nursery trees were fruit trees used in teaching fruit science. Nursery rows of catalpa and oak were planted years ago, and some of the trees still surround the president’s residence.

Provenance studies are experimental plantings of trees from different origins. The pinetum, east of Justin Hall, was a study of pines to see which variety would develop the straightest trunk. Over the years, this area has been thinned out and is now one of the most beautiful on campus.

Birds and squirrels have played a part in increasing the population of some species on campus. Many of the oaks, hackberries, buckthorns, and honeysuckles on campus were not planted by man, but by animals.

A greater number of woody species have been planted to landscape new buildings, parking lots, and walkways. Horticulture Professors Ahearn (yes, the former basketball coach, used to teach floriculture), Macon, Dickens, and Quinlan each contributed landscape designs and new trees to the campus. Unusual trees and shrubs were planted. Some of them sent to the University from as far away as New Zealand and Japan. In 1877, the Arnold Arboretum in Boston sent 100 species of trees and shrubs. One of those trees, the horsechestnut, is part of this walk.

Each year new trees and shrubs are added to the campus by the grounds department of the University's Division of Facilities Management, the Horticulture Club, and private donations. At one time, there were more than 700 different species of woody plants on campus. Although species diversity has not been maintained at this level in recent years, the Department of Horticulture, Forestry and Recreation Resources has a new display garden that features some less common landscape plants. The KSU Gardens is near the conservatory on Denison Avenue.

The KSU Tree Walk is a self-guided tour to familiarize you with the trees and campus of Kansas State University. This booklet's map and description will acquaint you with many varieties of trees that can be found in Kansas. The KSU Tree Walk is a project of the Kansas State University Department of Horticulture. It was revised in 2008 by Dr. Charles Barden and Evelyn Neier.

### **1. Eastern Redbud (*Cercis canadensis*)**

One of the few purple-flowering trees, the redbud's blooms announce spring in the wild and in planted landscapes. Redbuds are often multitrunked, and on older trees, flaking bark reveals a reddish underbark. This small deciduous tree has heart-shaped leaves and four-inch pods that persist into the winter. Although the redbud is a legume, it is not a nitrogen-fixing plant.

### **2. Bur Oak (*Quercus macrocarpa*)**

The bur oak is one of the more common trees in the wooded and open areas of northeast Kansas. Dark furrowed bark, large fiddle-shaped lobed leaves, and fringed-cap acorns are the keys to identification of this type of tree. Forty-five years ago these two trees were only sprouts among elm trees. When the elms were killed by Dutch elm disease, bur oaks claimed their space.

### **3. Northern Catalpa (*Catalpa speciosa*)**

The Catalpa was once an economically important tree, planted on farms for use as railroad ties and to provide the posts for fencing western Kansas. Six-inch, upright clusters of white flowers are produced in the early summer. In the fall and winter, narrow fruit capsules, up to 20 inches in length, hang from the branches. The leaves, large and heart-shaped, are a coarsely textured and messy tree, for although its wood is durable when next to the soil, it is not strong and will break in the wind. It is for these reasons that it is seldom used on home lawns. "Catalpa" is the American Indian name for this tree.

#### **4. Eastern Redcedar** ***(Juniperus virginiana)***

Eastern redcedars, although not native to this part of Kansas, have been naturalized here and are common in unburned fields. They are among the first trees to colonize an old field. Eastern redcedars are valued for their wood, which is decay-resistant and fragrant. Although the scale like foliage is evergreen, in the winter it may turn to a mud brown or blue-green color. Landscape cultivars, varieties cultivated for landscaping, include the Canaert juniper, which bears large quantities of blue fruits, retains a better green color through the winter, and becomes open and picturesque with age.

#### **5. Ponderosa Pine** ***(Pinus ponderosa)***

Second only to the Douglas fir, the ponderosa pine is one of our nation's most valuable timber trees. It is an adequate pine used in shelterbelts and mass plantings throughout Kansas. The ponderosa pine resembles the Austrian pine. For easy identification, remember that ponderosa pine has 6- to 8-inch needles that are usually in bundles of three, although bundles of two can be found. The needles of the Austrian pine are shorter (four to six inches) and are always found in bundles of two.

#### **6. Sugar Hackberry** ***(Celtis laevigata)***

The sugar hackberry is the southern cousin of the common hackberry. The sugar, or southern, hackberry can reach heights of 60 to 80 feet with an equal spread with mature. The bark is both smooth and "warty." The fruit of the southern hackberry is red and tastes sweeter than the blackish berries of the common hackberry.

#### **7. White Oak** ***(Quercus alba)***

If oaks are the kings of trees, then the white oak is the king of kings. The wood is high grade, the acorns are edible, its fall color is wine red, and its form becomes wide-spreading and majestic when given room to grow. The white oak is native to the eastern half of the United States, including eastern Kansas. It is, however, difficult to transplant and makes its best growth when it develops where it sprouts. For these two reasons, they are rarely carried by nurseries or planted in landscapes.

#### **8. Washington Hawthorn** ***(Crataegus phaenopyrum)***

A beautiful small tree or shrub in all seasons: emerging leaves turn from reddish-purple to a lustrous dark green; abundant white flowers appear in the late spring; fall color ranges from orange to scarlet; and the bright red fruit mature in autumn and persist through the winter. It is used as a single specimen, in screens, or as an accent in a shrub border.

#### **9. Ginkgo** ***(Ginkgo biloba)***

The Ginkgo is often called a living fossil. Botanists have determined that it is one of the oldest living plants, over 150 million years old. Look closely at the fan-shaped leaves and notice the unusual pattern of leaf venation, resembling a duck's foot. These leaves turn a clear yellow in the fall. Ginkgos are tolerant of most environments, including city conditions. Trees are either male or female, but male trees are generally preferred because the fruits of female trees have a disagreeable odor. The nut of the fruit is considered a delicacy in parts of China and Japan.

**10. Western Soapberry**  
***(Sapindus drummondii)***

This native tree bears clusters of alkaloid fruit which are yellow, berry-like and nearly transparent, showing the single, dark seed within. These “Soapberries” rubbed in water can substitute for soap. The compound leaves have curved long-pointed leaflets that make livestock sick. The open, rounded crown may reach to 40’ and is rather coarse, but the persistent fruits are decorative. The Indians used the dark seeds for beads.

**11. Horsechestnut**  
***(Aesculus hippocastanum)***

The tree, a horsechestnut, is more than 130 years old and was sent to the K-State campus as a gift from the Arnold Arboretum. Horsechestnuts are native to Europe, but have been planted extensively in eastern United States. Botanically, the species is related to the Texas buckeye, a native Kansas tree. Recognized by their palmately arranged leaflets, horsechestnuts are valued for their large, upright, white flowers in early to mid-May. The husks are spiny and the meat of the nuts is poisonous to cattle and humans.

**12. Flowering Crapapples**  
***(Malus spp.)***

The crabapple, another small flowering tree, is extensively planted in the landscape. For best results, crabapples should be planted in spots that receive full sunlight. The John Pair Horticulture Research Center has done extensive research on crabapples and has prepared the publication “Flowering Crapapples”. This publication, available at local Extension offices, describes flower, foliage and fruit characteristics as well as disease resistance of flowering crabapples. It is an excellent resource to help the homeowner select a crabapple.

**13. Golden Raintree**  
***(Koelreuteria paniculata)***

An outstanding tree with yellow flowers in large clusters of showy blooms which cover the tree in mid-summer when few plants are flowering. The flowers give rise to papery, 3-sided capsules which look like brown “Chinese lanterns” in the fall. The 14” long, pinnately compound leaves are red in the spring, and become bright green when mature. With a dense rounded crown of spreading branches to 40” high, it makes a great specimen for small lawns and patios.

**14. Black Walnut**  
***(Juglans nigra)***

This grove of 10 black walnut trees survived the drought of the 1930’s thanks to the deep soil of this depression site. The black walnut is another native Kansas tree valued for its high quality wood and edible fruit. Dark bark, strong outline, and an early yellow fall color make this a nice tree for large properties. The black walnut is difficult to transplant.

**15. Black Locust**  
***(Robinia pseudoacacia)***

This native American tree, the black locust is naturalized in Kansas and produces abundant fragrant blooms in the spring and 2- to 4-inch pods in October. One key to the identification of the black locust is the interlacing bark that resembles macramé. The black locust is a member of the pea family, as are the honeylocust, the Kentucky coffeetree, and the redbud. Like most legumes, the black locust is able to fix atmospheric nitrogen. The tree is of America’s most popular exports to Europe, where it is used chiefly in reforestation projects. In the United States it is often used in mine restoration.

**16. Douglas Fir**  
*(Pseudotsuga menziesii)*

America's number one lumber tree, it usually has a pyramidal habit even at maturity. On the Pacific coast, it is our second tallest tree; but grows only to 80' in the Midwest. The single, blue-green needles spiral around the yellow-green stems. The long, pendulous cones display prominent 'wings' and the bark has reddish-brown ridges. It is ornamental as specimen or in groups, but will suffer if an area is too dry or windy. Trees often show sun-scald damage to the southwest side.

**17. President's Home**

As you walk through this area, take time to notice the large cottonwood to the east of the sidewalk and south of the president's residence. The president's house, built in 1923 and remodeled in 1975, was originally surrounded by nursery row oak and hickory trees. Today the area is mostly oaks.

**18. Red Oak**  
*(Quercus rubra)*

The red oak is a very popular street and lawn tree due to its fast growth, red fall color, and winter form. It is also well-adapted to the alkaline soils of Kansas. The bark on the red oak is smooth as you look up into the tree. Most oaks have long taproots and are difficult to transplant. The red oak is easier to transplant but still should be moved as a young tree.

**19. Sweetgum**  
*(Liquidambar styraciflua)*

The sweetgum, a native American tree, is common to wet areas of the eastern and southern United States. Early settlers used the tree's sap as chewing gum for medicinal purposes. The sap is still used today in the manufacture of perfumes and drugs. A very important ornamental tree for Kansas, the sweetgum offers a strongly pyramidal shape when young, and spectacular fall color. In the wild, a sweetgum can reach to 120 feet tall, although 60 to 75 feet is expected in landscape situations. Keys to identification are the star-shaped leaves and the spiny, ball-like fruits that mature in the fall and last through the winter.

**20. Willow Oak**  
*(Quercus phellos)*

Closely related to Shingle Oak, this tree is one of the smaller leaved oaks. The leaves are lance-shaped, narrow, and to 4" long, and give it a fine texture.

**21. Bald Cypress**  
*(Taxodium distichum)*

A deciduous conifer whose feather-like bundles of needles turn a russet-brown before dropping in the fall, this species is native to southeastern swamps but is hardly far to the north, even in well-drained soils. The wood is very resistant to decay. Another feature is the straight trunk, buttressed at the base, and horizontal limbs that form a narrow pyramid. In wet soils the submerged roots project "knees" above ground.

**22. Scotch Pine**  
*(Pinus sylvestris)*

This grove of pines, referred to as the pinetum, is the remains of an experimental plot (a provenance study) to determine which variety of pine would produce the straightest trunk. Intermixed with the Scotch pine are Austrian and white pines. The Scotch pines are the trees with the attractive orange underbark. Scotch pines are the most popular Christmas trees in America. As you can see, they can become very picturesque with age. The number of Scotch pine is declining in the state due to an epidemic of Pine Wilt disease. The disease is caused by the pinewood nematode. The nematode is transmitted from pine to pine by the pine sawyer beetle. Infected trees wilt and die rapidly.

**23. Saucer Magnolia**  
*(Magnolia x soulangiana)*

A most popular magnolia in American gardens, the saucer magnolia, is a hybrid between two Chinese magnolias. Its 5- to 10- pinkish flowers open before the leaves in March and April. This small tree is outstanding in winter because of its lovely branching habit and large, fuzzy flower buds.

**24. Pecan**  
*(Carya illinoensis)*

The pecan is one of Kansas' most important native trees because of its edible nuts and valuable hardwood. These trees make good shade trees, often reaching 100 feet in height. The fall color is a pleasant yellow. Because pecan trees have deep taproots, it is best to transplant them when they are young.

**25. Eastern White Pine**  
*(Pinus strobus)*

Native to the northeastern United States, the eastern white pine was an important lumber tree until logging practices removed all but a few of the virgin stands. It is one of the few trees in America that grows naturally in a monoculture. The fine-textured needles are grouped in bundles of five, and the branches are arranged in tiers, each tier representing one year of growth. Because white pines prefer cool, moist conditions, they should not be planted any further west than Manhattan.

**26. Japanese Pagodatree**  
*(Sophora japonica)*

The Japanese pagodatree, also called the scholar tree, is an important ornamental tree in Kansas. The common name is derived from the use of the tree around Buddhist temples in Japan. Creamy white flowers in the summer are followed in October by yellow-green fruits that resemble strings of pearls. The Japanese pagodatree may be distinguished by its greenish, young (outer) stems and pinnately, or feather-structured, compound leaves.

**27. Persimmon**  
*(Diospyros virginiana)*

The persimmon, a Kansas native, is sometimes called the possum tree because opossums love the sweet, edible berry produced in the fall. Alligator-like bark is a key to identifying this species. The high-quality wood is used in the manufacture of gold clubs, billiard cues, and veneers. Persimmons are used in naturalizing landscapes, where they provided food for a number of wildlife species.

**28. Silver Maple**  
*(Acer saccharinum)*

Overplanted because of its vigorous growth in any soil, and touted as a “quick shade” tree, it soon becomes a liability. The seeds fly everywhere when they mature in the spring, the brittle branches break in windstorms, and the roots cause sidewalks to buckle. Its form can be kept nice if pruned every few years.

**29. Quinlan Natural Area**

In 1982 this area was dedicated to L.R. Quinlan, a professor of horticulture and landscape design who designed a number of the landscaping plantings on the campus. Many of the plants in this area have been labeled for identification.

**30. American Elm**  
*(Ulmus americana)*

As you cross the pedestrian bridge, look upstream and notice the American elm. This tree, one of the oldest elms on campus, grew naturally on the banks of Campus Creek. The majority of the American elms, one the queen of street trees, were destroyed by Dutch elm disease, as disease imported on logs from Europe. The disease spread by the elm bark beetle and by root grafts. The American elm was valued for its vase-shaped form that turned city streets into cathedral rooms and for its golden yellow color in the fall.

**31. London Planetree**  
*(Platanus x acerifolia)*

It is difficult to mistake planetrees. Their multicolored bark, huge maple-like leaves, and globe-shaped fruit make for easy identification. London planetrees are related to Kansas’ native sycamore, which inhabits low woods in the eastern and central United States. The two trees in front of King Hall were planted in 1917. Planetrees are appropriate for large areas, but in small areas can be too large and messy. They often drop fruit, large leaves, and small branches. Planetrees are very tolerant of city conditions. Another exceptional specimen of London Planetree is located on the lawn in front of Umberger Hall.

**32. Norway Spruce**  
*(Picea abies)*

The straight trunk, pendulous branchlets on horizontal limbs, shiny needles and long cones, along with its graceful pyramidal shape have made this species popular as an ornamental, a Christmas tree, and in shelterbelts. Spruces prefer a moist soil and a cool, humid climate.

### **33. White Ash**

***(Fraxinus americana)***

The white ash, another native American tree, is common to the wooded hillsides of Kansas. Trees are typically 80 feet tall with an equal spread, but they may reach heights of 120 feet in the wild. Cultivars have been selected for fruitlessness and for purplish fall color. White ash is a handsome tree for large areas. White ash is susceptible to damage from borers.

### **34. Honeylocust**

***(Gleditsia triacanthos intermis)***

These two honeylocusts stood in the fence row that separated the properties by Charlotte Preston and the Rev. Gale, original owners of what is now part of the K-State campus. Honeylocusts were commonly used as fence row trees; their two-inch thorns were a natural barbed wire. In the home landscape, honeylocusts are valued for their clear yellow color in the fall. Landscape cultivars are thorn less (v. *inermis*) and often without the long, twisted pods.

### **35. Green Ash**

***(Fraxinus americana)***

This green ash was planted approximately 125 years ago as part of the original windbreak that surrounded the campus. Green Ash trees are native to eastern Kansas and are usually found in bottomlands or along stream banks. They are some of our hardiest trees, able to withstand heat, drought, cold and periodic flooding. In the fall their leaves turn yellow. As with the white ash, most cultivars sold in nurseries are male trees that bear no fruit. Like the white ash, the green ash is susceptible to damage from borers.

### **36. Kentucky Coffeetree**

***(Gymnocladus dioica)***

Motorists traveling the two-lane highways of northeastern Kansas in the early fall are treated to the visual pleasure of Kentucky coffeetrees. This is the time when the leaves of the native trees turn yellow and the thick brown pods produced on stout branches provide a rugged contrast. Coffeetrees are either male or female. For home landscaping, male trees are preferred for easier maintenance. This coffeetree is a female tree. It is believed that settlers roasted the seeds as a coffee substitute when real coffee beans were unavailable.

### **37. Austrian Pine**

***(Pinus nigra)***

The Austrian pine, a popular Christmas tree, maintains a pyramidal shape until it reaches 30 or 40 years of age. At this age, many trees start to develop the flat-topped appearance seen in this tree. Planted extensively in the Midwest because of its tolerance of drought and heavy soils, the Austrian pine is now beginning to show problems with insects and diseases, including Pine Wilt. There are several picturesque Austrian pines on campus. They are remnants of the original windbreak (as is this tree), members of the provenance study in the pinetum, or planted en masse for ornamental effect.

### **38. Common Hackberry**

***(Celtis occidentalis)***

At one time the hackberry had replaced the American elm as the most planted street tree in the Plains states. This large, native tree can be recognized by its “warty” bark and by the red berries that develop in the fall, change to black, and persist through the winter. Hackberries are parasitized by a gall forming insect that develops on the underside of the leaves. In the fall, adult insect emerge and cover the doors and windows of houses. Hackberries are very hardy trees. In fact, they are difficult to kill and may become weeds.

### **39. Shingle Oak**

*(Quercus imbricaria)*

The wood of this tree was used by the pioneers to make shingles. Unlike other oaks, the leaf has no lobes, but it is oblong with a bristle at the tip. The leaves turn russet-brown and persist well into the winter which aids in its use as a windbreak. It also accepts pruning well for a use as a tall screen.

### **40. Pin Oak**

*(Quercus palustris)*

The pin oak's form may be the most distinctive of all oaks. It has a dominant central leader and thin lateral branches. Lateral branches ascent at the top of the tree, are horizontal in the middle of the tree, and descent near the base of the tree. Pin oaks are very popular landscape trees. Compared with other oaks, these trees are fast growing and easy to transplant. They make excellent shade trees and in the fall their leaves turn a nice red color. Pin oaks do suffer from iron deficiency in high pH (alkaline) soils, and in these soils, pin oaks should not be planted.

### **41. American Linden**

*(Tilia americana)*

In Kansas, the American linden, also called the American basswood, is a member of the oak-hickory forest community. Wildlife, including squirrels, rabbits, and deer, are attracted to the linden's fruit, basal sprouts, and bark. Bees are attracted to the fragrant flowers that appear in June, and from these flowers they produce a high quality honey. The wood is used for many purposes, including the making of furniture, boxes, and veneer. The American linden is a large tree reaching 60 to 70 feet in height with a rounded crown and pendulous branches. The smaller European lindens and their cultivars are preferred in home landscaping