

## Lesson 2: Identifying Missouri Trees

There are over 180 species of native and commonly naturalized trees in Missouri. Being able to identify all of these species would be impossible in the short span of this unit. However, identification of and knowledge about some of these trees will be a valuable tool to the tree farmer in setting out a tree farm plan.

### Taxonomic Identification

Taxonomic identification is simply recognizing living things by certain characteristics. For trees, we identify characteristics of their leaves, flowers, fruit, twigs, and bark.

**Leaves:** The arrangement of leaves on the stem is one of the most basic differentiating characteristics. In Missouri trees, we find opposite, alternate, and in a few cases, whorled arrangements. See Figure 2.1.

Many of our trees such as ash, hickory, and locust have compound leaves, while others such as elm, oak, and willow have simple leaves. See Figure 2.2.

Some of the leaves of various native trees are lobed – the edges of the leaves have indentations and projections or lobes. Most of our oaks and maples are lobed. See Figure 2.3.

**Flowers:** For our purposes, it is of value to know merely the arrangement of flowers on the tree or stem. Some species bear their flowers in various shaped clusters or singly. Many Missouri species bear their flowers in catkins. Catkins are usually flexible, drooping spikes bearing many single sexed flowers. See Figure 2.4.

Some trees may have flowers of only one sex. Others will have flowers of both sexes or, more commonly, single flowers which have both male and female components.

**Fruit:** Fruits of various species can be termed either dry or fleshy. The berry of the persimmon and fruit of the wild plum are fleshy. The winged seeds of the maple, the acorns of the oaks, and the pods of the locust are dry fruits.

**Twigs:** During certain times of the year, when there are no leaves, it may become necessary to rely on the various characteristics displayed in the twigs and buds for identification.

**Bark:** Although, with a little experience, it is quite easy to tell one kind of tree from another merely by bark characteristics, one must be able to recognize a range of features for each species. For example, the bark of an old oak is entirely different from that of a young oak.

### Growing Areas

Soils and climate create four broad tree growing areas in the state. These areas denote major changes in general tree growing conditions that should be considered when selecting species. However, within each major area many varying sites must be considered individually for species selection. See Figure 2.5.

**Ozark area (A):** A high priority area for tree planting. Extensive planting for commercial timber production is feasible in this area. Often little or no site preparation is needed before planting openings.

**River border area (B):** This high priority area for planting has many good sites for the production of high quality hardwood species. It is essential to prepare sites well before planting. Follow planting with regular cultivation or mowing. Otherwise survival and growth will be poor. The use of herbicides may be beneficial.

**Southeast lowland area (C):** Planting of certain species on overflow land in this area is feasible. Bulldozing or other site preparation is essential. Low grasses may be beneficial, but weedy sites must be cultivated or mowed regularly until trees are established. Also, the use of herbicides may be useful.

**Northern and western prairie areas (D):** In general the soils and climate conditions of these areas are not as favorable for tree growth. Site and species selection are extremely important. Prepare sites thoroughly and take extra precautions to prevent insect and disease outbreaks. Wildlife food and cover plantings are moderately successful and much needed.

# Forestry

Figure 2.1 – Arrangement of Leaves on the Stem

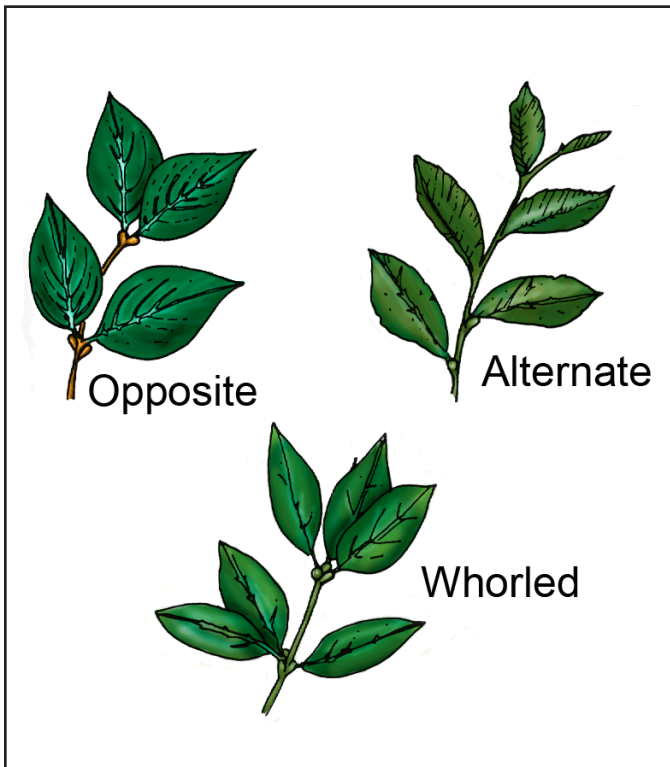


Figure 2.2 – Types of Leaves

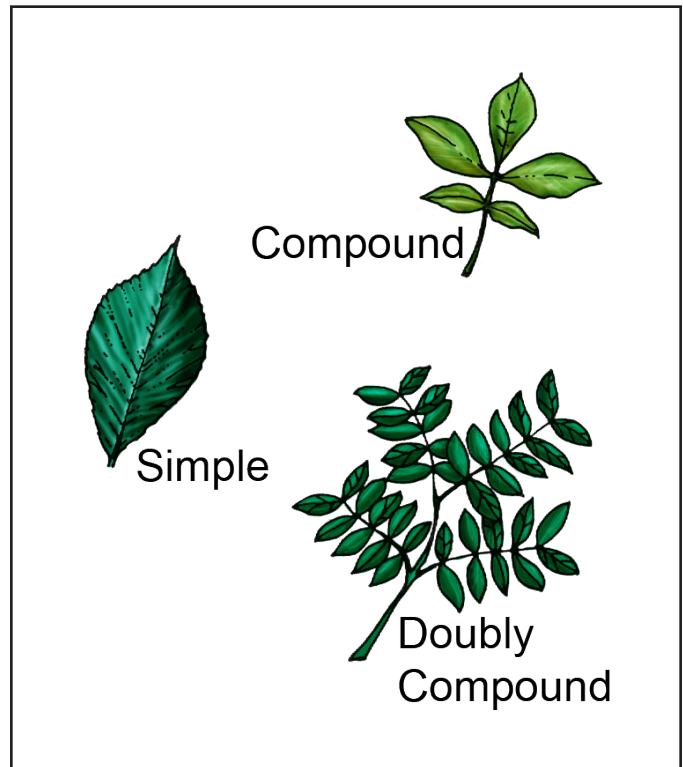


Figure 2.3 – Lobes

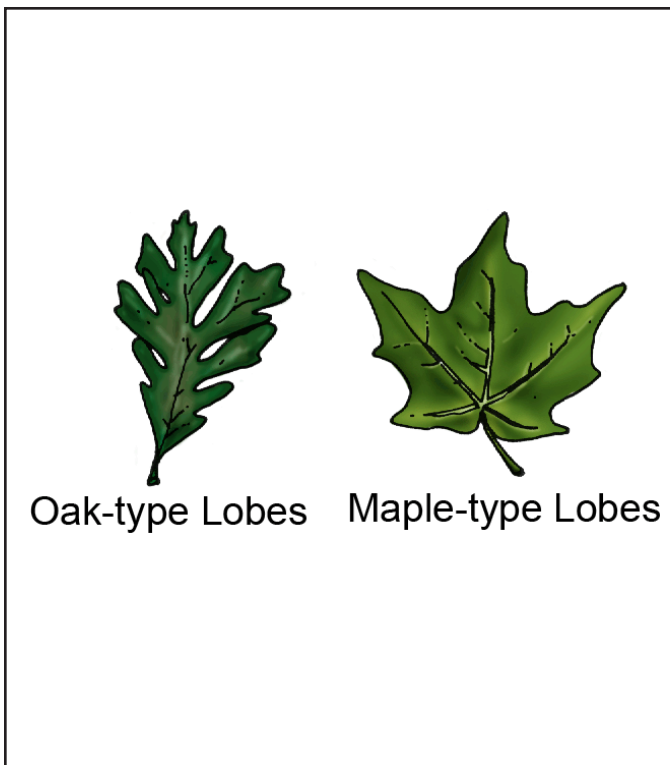
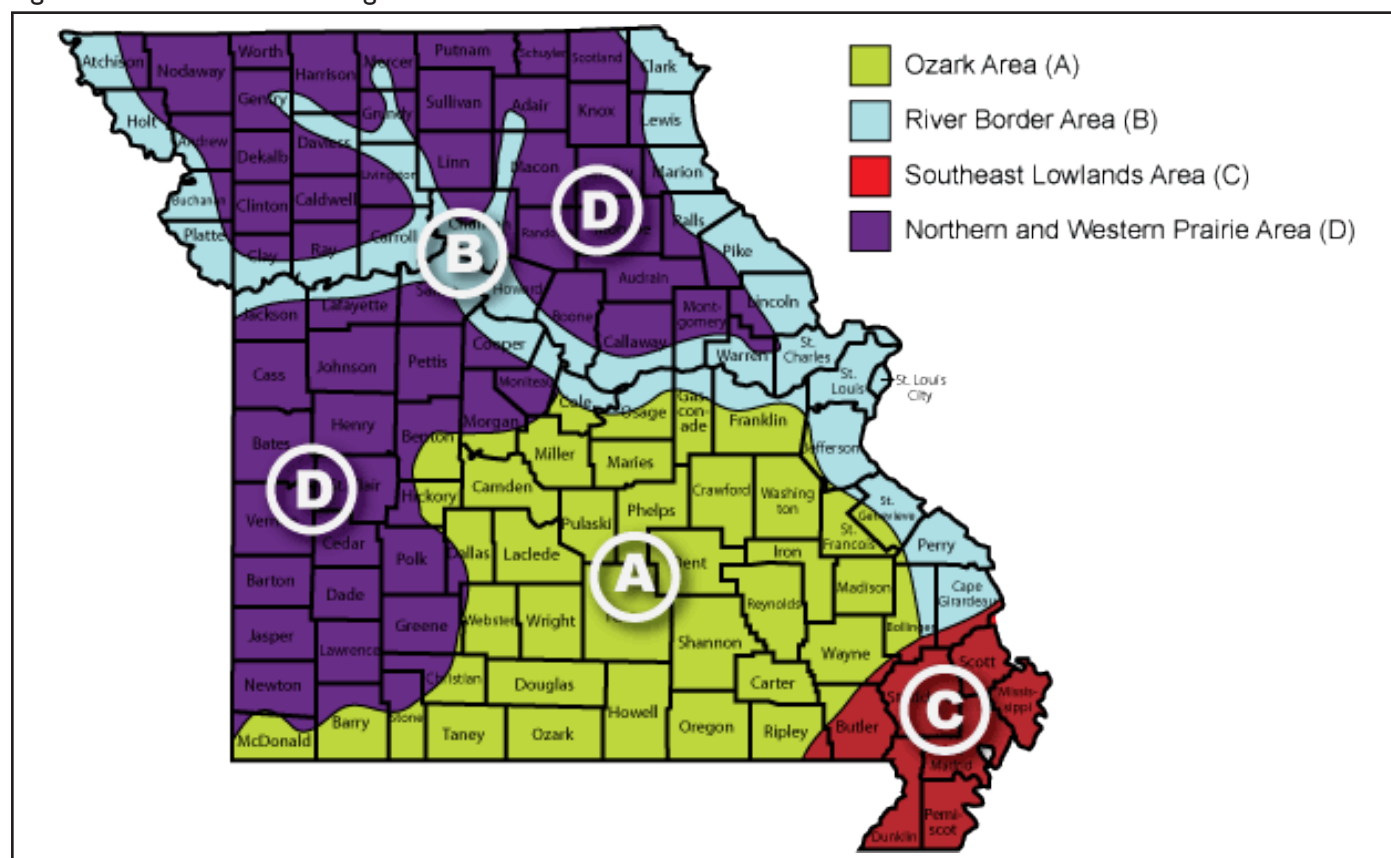


Figure 2.4 – Catkins



Figure 2.5 – The Four Growing Areas of Missouri



Credit: *Before You Order Tree Seedlings*, University of Missouri Extension Guide G5006.

## Common Trees of Missouri

### ***Baldcypress***

**Leaves:** Needle-like and delicate, arranged in two ranks in a feather-like fashion, loses needles in winter

**Flowers:** Male – long drooping clusters  
Female – globe-shaped at end of branch

**Twigs:** Light green at first, becoming reddish brown by winter

**Bark:** Cinnamon brown; divided by long, loose, shreddy ridges

**Area:** Area C

**General:** Baldcypress occurs naturally on deep swamps that are usually flooded for long periods of time. Baldcypress has been successfully planted along lakes and watercourses in central Missouri and has been very successful.

### ***Black Locust***

**Leaves:** Alternate, compound, 9 to 19 oval leaflets, droop at nightfall

**Flowers:** Large clusters; creamy white, fragrant blooms in late spring

**Fruit:** Thin, flat pod containing 4 to 8 kidney-shaped seeds

**Twigs:** Dull brown, slender; some spiny

**Bark:** Brown with yellow or orange inner bark; inner bark containing poison named “robin” (capable of killing livestock when eaten in large quantities)

**Area:** Found in areas A, B, and D

**General:** Primary uses are for posts, erosion control, fuelwood, and, because it is a legume, soil improvement. Branches are armed with pairs of short, sharp spines. Because it spreads easily from root runners, it can become a nuisance.

# Forestry

## **Black Oak**

- Leaves: Alternate, simple, roughly egg-shaped; 5 to 7 bristle tipped lobes, dark green, shiny
- Flowers: Male and female flowers on same tree  
Male – hairy catkins 4 to 6 inches long  
Female – red on short, hairy stalks
- Fruit: Acorn 3/4 inch long, bowl shaped, scales forming loose fringe on rim
- Twigs: Moderately stout, dark brown to black, smooth when mature
- Bark: Dark, black, rough, deeply furrowed, blocky on older trees, orange inner bark
- Area: All areas
- General: Black oak is second only to white oak in the amount of net board foot volume of commercial forest area. Black oak is frequently found on dry, rocky ridges and upper slopes. In southern Missouri, black oak competes with and often crowds out shortleaf pines. The wood of black oak is used for flooring, crating, railroad ties, and rough local construction.

## **Black Walnut**

- Leaves: Alternate, compound, 13 to 25 leaflets, spear-shaped, long, pointed tip
- Flowers: Male – catkins 3 to 5 inches long  
Female – 3 to 5 on spikes
- Fruit: Large, globe-shaped nut in thick, leathery, rough, green husk; shell hard and bony, rounded; kernel sweet and edible
- Twigs: Stout, brownish
- Bark: Variable; almost black, dark chocolate brown inner bark
- Area: All areas; prefers deep, well-drained, nearly neutral soils
- General: This is one of the best known and the most valuable trees in our state. Since 1899, one-fifth to one-sixth of all black walnut lumber comes from Missouri forests. On an individual tree basis, black walnut is the most valuable commercial lumber species in the United States. Its wood is highly valued for gun stocks, veneer, and fine furniture. Nuts are also sold commercially and the shells are used as an abrasive.

## **Eastern Cottonwood**

- Leaves: Alternate, simple, long, pointed tip, broadly rounded base
- Flowers: Male and female flowers on separate trees  
Male – red catkins  
Female – green catkins
- Fruit: Long cluster of alternately arranged capsules, each capsule containing many seeds in a cottony mass
- Twigs: Moderately stout, light brown or tan, shiny
- Bark: Greenish yellow and smooth on young stems; thick, dark, and deeply furrowed on old trunks
- Area: All areas except south central portion of A
- General: The cottonwood is a large spreading tree found along streams throughout the state. It is sometimes used as an ornamental tree where large spaces exist because it grows rapidly and requires minimal care. Its leaves turn bright yellow in the fall. It is used for excelsior, crates, and barrel staves. It has also become popular as a source of wood pulp for paper.

## **Eastern Redcedar**

- Leaves: Scale-like or awl-shaped, opposite around a four-angled central stem, dark green
- Flowers: Male and female flowers on separate trees  
Male – cone-like with 4 to 6 scales  
Female – structure with fleshy scales
- Fruit: A bluish berry, about the size of a pea, with a white frost-like shade
- Twigs: Slender, four-angled, becoming reddish brown
- Bark: Tan to reddish brown, shreddy
- Area: All areas
- General: Eastern red cedar is one of the most versatile trees in Missouri. It is found in every county in the state on nearly all classes and conditions of soil. It seems to thrive on barren soils where few other trees are found. Its heartwood is red, durable, and aromatic and is used in cedar chests, closets, and novelty items. Its dense evergreen foliage makes it a valuable windbreak, screen, or hedge tree. The fruit is a favorite food of birds.

## **Flowering Dogwood**

- Leaves: Opposite, simple, 3 to 5 inches long, egg-shaped, pointed at both ends
- Flowers: Appear before the leaves in small flat-topped clusters, greenish white or yellow with four white petal bracts beneath, occasionally bracts are red or pink
- Fruit: Borne in clusters, egg shaped, bright scarlet
- Twigs: Slender, purple
- Bark: Reddish tan to dark brown; broken in square or round, blocky scales
- Area: All areas around or south of the Missouri River
- General: Missouri's "State Tree" is conspicuous in the early spring by its large, showy, white, petal-like bracts which give the appearance of large spreading flowers. The scarlet fruit is relished by birds, squirrels, and other animals. The Dogwood is a small tree commonly found in the understory of a woodland. It is found naturally south of the Missouri River but can be grown in selected sites.

## **Green Ash**

- Leaves: Opposite, compound, 7 to 9 spear-shaped leaflets
- Flowers: Male and female flowers on separate trees  
Male – wooly clusters  
Female – greenish red
- Fruit: Seeds with wings, paddle-shaped, narrow
- Twigs: Stout, velvety when mature
- Bark: Gray, the ridges crossing frequently to form a diamond pattern
- Area: All areas
- General: The green ash is often planted as a shade tree because it is rapid in growth. A bottomland species, its wood is used for many of the same purposes in the lumber industry as white ash.

## **Hackberry**

- Leaves: Alternate, simple, narrow egg-shaped, long points, often hooked in a sickle-like fashion
- Flowers: Male and female flowers on the same tree  
Male – green, borne in small clusters  
Female – green, borne singly

- Twigs: Slender, light brown, becoming gray at maturity (A very common disease of hackberry causes erratic twig growth called "witches broom.")
- Bark: Grayish, rough with warty projections
- Area: A, B, and D
- General: In rich bottomlands where hackberry is commonly found, it may grow 125 feet in height. Many people consider the hackberry a desirable shade tree. Insects may cause galls. The purple berrylike fruit is food for squirrels and birds.

## **Northern Red Oak**

- Leaves: Alternate, simple, 5 to 8 inches long
- Flowers: Male and female flowers on the same tree  
Male – 4 to 5 inches long; heavy, yellow catkins  
Female – 2 to 3 on short stems
- Fruit: An acorn 1 inch long, oblong, somewhat hairy at the cup end; cup end is saucer shaped, enclosing 1/4 to 1/3 of the nut
- Twigs: Slender, reddish-brown
- Bark: Dark brown or black, smooth on young trees, deeply furrowed on older trunks
- Area: All areas
- General: Northern red oak is a favorite wood for cross ties, rough lumber, flooring, and for certain types of barrels. The brilliant red color of its autumn leaves and the symmetrical form of the tree make the species a widely used shade tree where space is not limited.

## **Osage Orange (Hedge Apple)**

- Leaves: Alternate, simple, long pointed tip, dark green and lustrous
- Flowers: Male and female flowers born on separate trees  
Male – small, greenish cluster  
Female – globe-shaped, many-flowered head
- Fruit: A large globe-shaped, fleshy fruit resembling a rough, green orange; commonly called a hedge apple
- Twigs: Slender, orange-brown or tan in color
- Bark: Greenish, fissured when young with orange inner bark, shreddy, orange and brown when mature



# Forestry

**Area:** D, B, parts of C and A  
**General:** In the past, Osage orange has been used as a “living fence.” The dense, compact, thorny branches and short trunk provide an excellent barrier to livestock. The wood of this species has properties which are ideal for making archery bows. In addition, its hardness and durability make this an excellent wood for fence posts and telephone pole insulator pins.

## Pecan

**Leaves:** Alternate, compound, spear-like leaflets, lower leaflet hooks back toward the stem  
**Flowers:** Male – catkins in threes, 3 to 5 inches long  
Female flowers – in several flowered spikes on the tips of branches  
**Fruit:** In clusters of 3 to 12 oblong-shaped nuts in a thin husk, nut smooth with thin shell and sweet kernel  
**Twigs:** Stout, reddish-brown with large orange-brown lenticels  
**Bark:** Thick, light to dark reddish-brown, deeply furrowed to scaly on very old trees  
**Area:** B, D (southwestern), A (western)  
**General:** Pecan is a favorite nut, timber, and shade tree of Missouri. It occurs naturally in areas along certain large streams and rivers throughout the state. It is most common on well-drained loam soils not subject to prolonged overflow. It also occurs on certain heavy textured bottomland soils and some cool protected slopes. Although once used a great deal for flooring, the lack of adequate amounts of marketable pecan has prevented this use in recent years.

## Persimmon

**Leaves:** Alternate, simple, oval-shaped, 4 to 6 inches long with pointed tips  
**Flowers:** Male and female flowers on separate trees  
Female flowers – solitary, yellow or creamy white, bell shaped  
**Fruit:** Large fleshy berry 1 to 1-1/2 inches in diameter, orange and wrinkled when ripe in autumn, edible but often astringent

**Twigs:** Slender, brown becoming gray  
**Bark:** Dark, broken into thick blocks, with the inner block on young trees showing orange between blocks  
**Area:** A, B, D (mainly below Missouri River), and C  
**General:** The wood of the persimmon tree, closely related to the tropical ebony, is very hard and heavy. It is often used for golf club heads and in weaving shutters where a resistance to splitting is necessary.

## Pin Oak

**Leaves:** Alternate, simple, broadly oval in outline with 5 to 7 narrow lobes, forked lobes  
**Flowers:** Male and female flowers on the same tree  
Male – hairy catkins 2 to 3 inches long  
Female – on short, hairy stalks; reddish  
**Fruit:** Acorn, small 1/2 inch long; often striped with dark lines; enclosed 1/3 of the way with thin saucer-shaped cups  
**Twigs:** Slender, green at first becoming red-brown  
**Bark:** Thin and smooth when young, shallowly fissured and rough when mature  
**Area:** Parts of A, B, C, and D  
**General:** The pin oak is a wetland tree, growing in the bottomlands and borders of swamps (but also occurring in poorly-drained soils and along draws in nearly every county of the state). Because it is one of the fastest growing oaks, it is used extensively as a windbreak and as an ornamental tree. Pin oak has a single, upright stem with numerous long, tough branches. The lower branches usually droop. It produces very knotty, low-grade lumber. Acorns are a favorite food of waterfowl.

## Red Bud

**Leaves:** Alternate, simple, heart-shaped, dark green in summer, yellow in fall  
**Flowers:** Purplish-red clusters along the stem, appear before leaves in early spring  
**Fruit:** A legume; oblong, flattened, multi-seeded pod; reddish color  
**Twigs:** Slender, brown, turning darker with maturity  
**Bark:** Covered with small, dark, loose scales; underbark reddish-brown

# Identifying Missouri Trees

Area: All areas

General: This understory tree is probably found in every county of our state. It is a small, flat-topped tree which grows in the shade of the larger oaks and hickories. This tree is valued for its beauty. The flowers and heart shaped leaves, as well as growth habits, make redbuds a desirable ornamental tree.

## **River Birch**

Leaves: Alternate, simple, egg-shaped, 1-1/2 to 3 inches long, dark green and shiny

Flowers: Male catkins – clustered 2 to 3 inches long  
Female catkins – short, 1/3 inch long

Fruit: Cone-like in appearance, small winged seeds

Twigs: Slender, dark red

Bark: Thick and dark brown on old trunks, thin and papery on young trees, light pink to tan on outer surface

Area: A (except south central), B (except extreme north), C, and D

General: A medium-sized tree (rarely as tall as 8 feet or greater than 2 to 3 feet in diameter); more commonly found in clumps of several trunks.

## **Shagbark Hickory**

Leaves: Alternate, compound, 5 leaflets, elliptical (broadest near pointed tip), dark yellowish-green crown turning rusty golden yellow in the fall

Flowers: Male catkins – in threes, green, hairy  
Female flowers – on short spikes

Fruit: 1 to 2-1/2 inches in diameter, nut in husk, nut flattened with 4 prominent ridges, pale tan in color, sweet kernel

Twigs: Stout, reddish-brown

Bark: Gray, smooth when young, shredding later into strips or shaggy plates, ends curving away from the tree

Area: All areas except south central A

General: The shagbark often becomes a nuisance around agricultural land since it is quick to invade open fields. The wood is heavy, strong, and flexible. It was once used for the spokes, hubs, and rims of wagon wheels. Its principal

uses today are for handles for hammers, axes, picks, and hatchets. A great deal of this wood is also made into charcoal for barbecue grills. Nuts are excellent wildlife food.

## **Shortleaf Pine**

Leaves: Needles in bundles of 2 or 3 on the same tree

Flowers: Male and female flowers cone-like, borne on the same tree

Fruit: A cone maturing in two seasons; egg shaped; individual scales, each with a minute prickly

Twigs: Moderately stout, purple with white frost-like shade

Bark: Rough and scaly at first, thick and divided into large cinnamon-red plates on old trees

Area: A, planted in C and D (southwest area)

General: The shortleaf pine is the only pine native to Missouri. It is an important timber species, used largely for lumber, paper-pulp, and treated posts. Scattered stands of shortleaf pine furnish valuable wildlife cover. In many cases, large areas may be seeded, under a forester's direction, more economically than they can be planted.

## **Silver (Soft) Maple**

Leaves: Opposite, simple, deeply 5-lobed, pale green above, silvery white beneath

Flowers: Yellow-green to reddish

Fruit: 2 single-winged seeds with wings wide spreading, largest of the native maples

Twigs: Orange-brown to red, have a disagreeable odor when bruised

Bark: Smooth and gray on young trees, scaly or with long thin plates on older trees

Area: All areas

General: Silver maple is the fastest growing of all maples and produces a shade tree in relatively few years. Commercially, this species has great potential. In certain parts of the state, its importance has risen due to its use as a furniture wood. It is also used for windbreaks and streambank protection.

# Forestry

## Sumac

- Leaves: Alternate, spear-shaped, compound, 9 to 27  
Flowers: Small and green in dense clusters at the tip of the branch  
Fruit: Dense clusters of globe-shaped berries covered with crimson hair  
Twigs: Stout  
Bark: Thin, gray  
Area: All areas except extreme northwest B and D  
General: Sumac is a shrub up to 6 feet in height. Its fruit ripens from June through August and is eaten by many birds, including wild turkey.

## Sweetgum

- Leaves: Alternate, simple, star-shaped with 5 pointed lobes, turns brilliant red and yellow in the fall  
Flowers: Male and female flowers on the same tree  
Male – hairy clusters, 2 to 3 inches long  
Female – clustered on swinging globe-shaped head  
Fruit: A round globe-shaped cluster of capsules, these ball-like capsules persisting on trees over winter  
Twigs: Moderately stout, greenish-yellow with corky lenticels  
Bark: Light gray on young trees; dark brown, fissured and rough on older trees  
Area: C  
General: Sweetgum is restricted in range to the lowlands of the bootheel and scattered occurrences in upland swamps. Sweetgum is an excellent lumber species. Nationally, it is second only to oak on the hardwood market. It is made into veneer, furniture, interior trim, and numerous other products.

## Sycamore

- Leaves: Alternate, simple, large with 3 to 5 main lobes, very coarsely toothed, yellow-green  
Flowers: Male and female flowers on the same tree  
Male – short-stalked dark red clusters  
Female – long-stalked, ball-like green and red clusters

- Fruit: A ball-like multiple of many seeds, brown when mature, clusters hanging on tree throughout winter  
Twigs: Moderately stout, green  
Bark: Dark brown; broken into small, rounded scales; smooth and white with large, loose, olive-green, red, or brown scales on older trees  
Area: All areas  
General: Sycamores are very tolerant of wet soil conditions and fluctuations in the ground water table. Sycamores make excellent den trees for squirrels, raccoons, and birds and provide food for beavers and squirrels. The wood is hard, tough, and almost impossible to split. Although used in butcher blocks, tobacco boxes, furniture, crates, and barrels, its use in construction is limited due to its warping tendency.

## White Oak

- Leaves: Alternate, simple, 4 to 9 inches long, somewhat wider toward the tip end of the leaf, 7 to 9 smooth-edged lobes  
Flowers: Male flowers – hairy catkins  
Female flowers – inconspicuous  
Fruit: 3/4 inch long acorn, short-stalked cup covered with warty scales enclosing about 1/4 of the nut's length  
Twigs: Slender, greenish red with white frost-like shade, becoming reddish brown as it matures  
Bark: Light, rough with long loose scales, becomes blocky when older  
Area: All areas  
General: White oak can be found under a diversity of environmental conditions. It often grows in almost pure stands on loamy, well-drained soils in protected coves on cool slopes. Probably the most important use of white oak in Missouri is the cooperage industry for making barrels for distilleries. Nuts of the white oak are a choice food for squirrels. Leaves turn a deep red in autumn and persist on the tree during early winter.



### **Wild (American) Plum**

- Leaves: Alternate, simple, oval in shape with long pointed tip
- Flowers: Clusters of several flowers, individual flowers about 1 inch in diameter, white
- Fruit: Globe-shaped, 1 inch diameter, red or orange colored, sweet and edible
- Twigs: Slender, dark reddish brown, smooth and shiny
- Bark: Thin; dark reddish brown; smooth when young; thin, dark plates when older
- Area: D (southwest), B, A (west), and C
- General: The wild American plum is a small tree commonly occurring in thickets throughout the state. It provides an excellent wildlife cover and erosion control when planted in the heads of washes in area D.

### **Summary**

These are just a few of Missouri's numerous tree species. Being able to identify some of these common species is important to the tree farmer, who needs to know their potential uses and to know what species will grow best under given environmental conditions.

### **Credits**

Settergren, C., and R.E. McDermott. *Trees of Missouri* (Guide SB767). Columbia: University of Missouri Extension, reviewed 2000. Accessed May 27, 2008, from <http://extension.missouri.edu/explore/specialb/sb0767.htm>.

Slusher, J.P., and G. Hoss. *Before You Order Tree Seedlings* (Guide G5006). Columbia: University of Missouri Extension, revised 2000. Accessed May 27, 2008, from <http://extension.missouri.edu/explore/agguides/forestry/g05006.htm>.

