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AMERICAN SYCAMORE

. . . *an American wood*



Sycamore is a distinctive tree widely seen on the Nation's streets and along its highways. Sycamore wood ranges in color from light yellow to reddish brown and displays an attractive figure with brown or silvery appearing flecks when quartersawn. It is highly desired for furniture, specialty products, and food containers because of its suitable strength properties, easy machinability, and neutral taste and odor.

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Figure 1. — Natural range of American sycamore.

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AMERICAN SYCAMORE

. . . *an American wood*

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DISTRIBUTION

The natural range of American sycamore (*Platanus occidentalis* L.) extends from the Canadian border in the area of Lake Erie to the Gulf of Mexico and from the Atlantic coast westward to the Great Plains (fig. 1). It occurs in all States east of the Great Plains except Minnesota. It is found through central Iowa, in all of Illinois, except the extreme northern portion, and in the southern half of the Lower Peninsula of Michigan. Along the western boundary it is found in southeast Nebraska and through the eastern parts of Kansas, Oklahoma, and Texas. Scattered islands of sycamore are also found in northeastern Mexico.

Throughout its range, sycamore grows on relatively flat land that has a good supply of ground water, such as on the edges of streams, lakes, and swamps. It occurs at elevations from just above sea level in some sections to 1,000 feet in the northern part and 2,500 feet in the southern part of the Appalachian mountains. Within the range of sycamore, average annual temperatures vary from 40 to 70 degrees F., with average annual minimums and maximums from -38 to 105 degrees F.

Soil requirements for this species are not exacting, but sycamore occurs most frequently and reaches its largest size in alluvial soils along streams and in bottomlands. The tree tolerates wet soil conditions but prefers deep, moist, well-drained soils. In the central portion of its range, it is sometimes a pioneer tree on upland old-field sites, and is often found in pine stands and in mixture with other hardwoods on spoil banks. It is a preferred species for planting on fresh spoil banks, and is a common shade tree along streets and in yards throughout most of its

range. In the Southern States, sycamore is planted more and more for pulpwood production.

In the central and northern part of its range, sycamore is the predominant tree in the river birch-sycamore forest cover type. Common associates are red maple, black willow, and other moist-site hardwoods. In the southern part of its range, sycamore is a major tree in the sycamore-pecan-American elm type found on the alluvial flood plains of major streams. Associated species in this type are boxelder, green ash, sugarberry, silver maple, cottonwood, black willow, sweetgum, river birch, and water and Nuttall oaks.

DESCRIPTION AND GROWTH

Sycamore grows to a larger diameter than any other hardwood tree in America, and is exceeded in growth rate only by cottonwood, soft maple, and black willow. It is not unusual for young trees on good sites to average 1 inch in diameter and 6 feet in height growth during each of the first 10 years after planting.

Open-grown sycamores are typically symmetrical and pyramidal in shape during early years; however, with age they usually develop large irregular crowns with wide-spreading branches. Under natural forest conditions the trees prune well and at maturity may have long, slightly tapered boles clear of limbs for 70 or 80 feet and relatively small crowns extending to 120 feet or more. Diameters of mature trees commonly reach 2 to 3 feet and there are records of trees with diameters exceeding 10 feet and heights of more than 140 feet.

Sycamore grows singly or in small groups with other trees over most of the range and seldom in extensive pure stands (fig. 2). In the bottomlands of the lower Mississippi River, however, sycamore may be found occasionally in pure stands 40 to 100 acres in extent.

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NOTE: This publication supersedes unnumbered publication *American sycamore*, issued 1945.



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Figure 2.—Stand of 40- to 50-year-old American sycamore trees in overflow river bottom. Central tree is 27 inches d.b.h. and 120 feet tall.



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Figure 3.—Leaf, twig, and fruit of American sycamore.

Seeds are usually produced in abundance each year, although occasional late spring frosts can kill both twigs and flowers, thus materially reducing seed production during the season. The earliest commercial seed bearing age is reported to be 25 years; however, well-tended, open-grown trees have produced viable seed at age 6 and abundant seed balls by age 10. Plantation-grown trees of the same age produce seed sparingly, even after thinning.

Seeds are elongated achenes surrounded at the base by a circle of upright brown hairs which act as a parachute when the seed ball breaks up and individual seeds are released. These same hairs become a problem when seeds are cleaned because of the extreme irritation they cause when breathed into the respiratory system (fig. 3).

Seeds are disseminated irregularly from late fall to May. In the South, the seed heads soften and seeds are loosely held beyond mid-January. Therefore, seed collections should be made prior to mid-January to prevent excessive loss.

Sycamore stumps sprout prolifically, and cuttings made from both sprouts and young trees 1 to 3 years old root readily. Therefore, plantations may be established from cuttings as well as seedlings.

The bark of young sycamore trees and sprouts is thin and smooth; it becomes flaky near the base at about 4 years of age. Bark on mature trees is brown, flaky, rather thick, and sometimes furrowed near the base. On the upper bole and branches the bark is characteristically mottled with smooth whitish or pale green new bark that contrasts with the brown older bark which is shed in large thin flakes. At a distance the tree has a ghostly, grayish-white appearance (fig. 4).

The leaves are large, coarse, and palmately veined with 3 to 9 lobes. The underside is covered in the early growing season by pubescence. These tiny hairs, shed from midseason to abscission in the fall, are particularly irritating to the respiratory system and cause problems to those harvesting, pruning, or tending plantations. Terminal buds are absent and the short-pointed lateral buds are hidden beneath the leaf petiole.

Numerous insects feed on the leaves of sycamore or bore into the bole but none cause damage of real economic importance. Diseases, such as anthracnose which occurs in the middle to northern part of the range, are problems now and promise to be more serious as sycamore is grown in even-aged

plantations. Dieback and cankers caused by *Diplodia theobromae* and by *Ceratocystis fimbriata* can reduce growth rate and wood quality and possibly kill the tree. Sycamores may be killed or severely damaged by forest fires, particularly at young ages, but typical sycamore sites in the bottomlands are usually wetter and less susceptible to fires than upland forest areas.

COMMON NAMES

The American sycamore, or simply sycamore, is often called buttonwood or buttonball and is sometimes referred to as the planetree.

RELATED COMMERCIAL SPECIES

There are three species of sycamore in the United States, but only American sycamore is important in forestry.



SUPPLY

Surveys of the Nation's timber resources reveal that there are about 1.25 billion cubic feet of sycamore growing stock in trees 5 inches and larger in diameter. This includes about 4.4 billion board feet of sawtimber with diameters 11 inches and larger. Of the 34 States that make up the natural range of sycamore, Indiana sustains the largest volume of sawtimber, followed in declining order by Illinois, Ohio, Virginia, Missouri, Kentucky, Arkansas, Mississippi, Tennessee, and West Virginia. These 10 States, eight of which make up the Mississippi River drainage network, have about 70 percent of the Nation's commercial supply of sycamore. Of the four geographic regions of sycamore growth, approximately 329.9 million cubic feet of total sycamore growing stock are found in eight of the North Central States, and 346.2 million cubic feet are found in the seven South Central States. The Northeast Region, comprising 14 States that include the six New England States, supports a volume of about 314.3 million cubic feet. The five Southeastern States, led by Virginia, have 260.7 million cubic feet of sycamore growing stock.

Figure 4.—Typical lower bole (left) and upper bole (right) of American sycamore.

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PRODUCTION

Lumber production figures for sycamore were first recorded in 1899 when 29.7 million board feet were cut. Production has fluctuated widely since then. The smallest production of sycamore was somewhat less than 8 million board feet in 1932 during the economic depression. The maximum cut of 77.7 million board feet occurred in 1942, and production has declined gradually since then. Because sycamore is not a widely used species and is not in plentiful supply—in contrast with the gums, hickories, maples, and oaks—annual data for sycamore are not available (fig. 5). Most sycamore lumber, veneer, and plywood are produced by about 80 plants located primarily in those States with major supplies of sycamore growing stock.

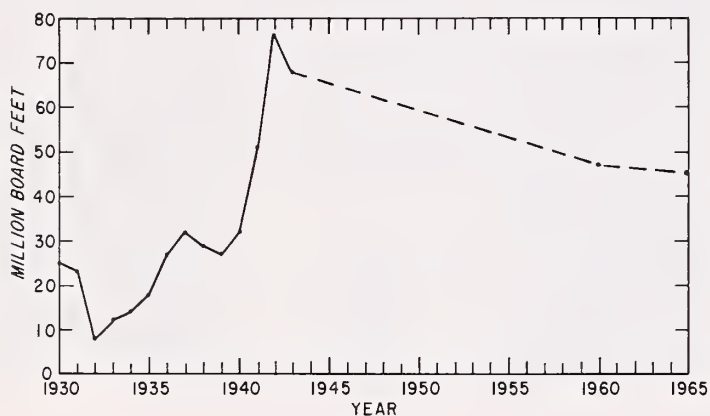


Figure 5.—Lumber production of American sycamore, 1930-1965. Data are unavailable for years from 1943 through 1965—as shown by broken line—except for 1960 and 1965.

CHARACTERISTICS AND PROPERTIES

The annual rings of sycamore are distinct and delineated by a narrow band of light-colored tissue at their outer margins. The rays are relatively wide and conspicuous, resembling those in quartersawn oak, but smaller. Sycamore rays, unlike oak rays, are darker than the rest of the wood. Although sycamore sapwood is not always distinguishable from heartwood, the sapwood generally is white to light yellow, whereas the heartwood is light brown to dark brown or reddish brown.

Sycamore wood has intermediate characteristics when compared with other hardwoods. It is classified moderate in weight, hardness, stiffness, shock resistance, strength in bending, endwise compression, and in nail-holding ability. Sycamore wood has an average specific gravity of about .49 at 15-percent moisture content (MC), and weighs about 39 pounds per cubic foot. When dried to 15 percent MC, shrink-

age across the grain of plainsawn lumber is about 2.3 percent of total dimension. Bending strength is 10,000 pounds per square inch and stiffness is 1,260,000 pounds per square inch, about halfway between the stiffness of yellow-poplar and tupelo gum. Sycamore has a close texture, glues satisfactorily, and because of its interlocked grain resists splitting by nails and screws. It maintains its shape well when bent after steaming and machines well, but requires the use of high-speed cutter heads to prevent chipping. The wood shrinks moderately in drying, is inclined to warp when plainsawn, and is not durable when exposed to use conditions that are conducive to decay. Sycamore is odorless, tasteless, and stain-free, all traits which make it desirable for containers for food, tobacco, and similar products.

PRINCIPAL USES

Sycamore is used for a variety of products, but the relative importance of its principal uses has changed throughout the years.

Wood use by industry	Percent of total production	
	1960	1965
Sawmill and planing mill	40	30
Furniture	30	45
Containers	20	15
Specialty products	10	10

Within the sawmill and planing-mill industry, lumber production declined about one-third between 1960 and 1965, but millwork, flooring, and hardwood dimension products doubled. Sycamore lumber is highly regarded for furniture-drawer sides, and lower grades are used for pallets. In 1960, wire-bound boxes were the principal containers made of sycamore, but nailed boxes predominated in 1965. In addition to sawn-lumber products, sycamore is peeled and sliced into veneers and the veneers are assembled and glued together to produce plywood, primarily for furniture. Sycamore is also one of the preferred species for various specialty products, such as butcher blocks and handles for brushes and brooms.

Sycamore is frequently used for pulpwood along with other species of hardwoods. Because of its fast growth and its ability to regenerate by means of coppice or sprouting, sycamore shows great potential as a source of fiber for the manufacture of paper, particleboard, and wood fiberboard. Research has revealed that physical and economic harvesting efficiencies result from cycles of planting, reaping, sprouting, and re-reaping. This

concept of sycamore silage-type production in short rotations has evoked great interest among foresters and the industries that use wood fiber.

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