
GROWING OAKS IN THE GREAT PLAINS

by John C. Pair

Historically, oaks have played a very important role in the history of the American frontier. Not only were oaks important for building materials, barrel staves and other wood products, they were important landmarks and provided meeting places for commerce and government. For example, a large bur oak (*Quercus macrocarpa*) in Council Grove, Kansas, now called the "Council Oak", once stood where a peace treaty was signed between U.S. commissioners and the Osage Indians on August 10, 1825, whereby permanent access was obtained across Indian land establishing the Santa Fe Trail. Another was the "Post Office Oak," where from 1825 to 1847 a cache at the foot of this tree served as a post office for incoming and outgoing wagon trains. Bur oak, aptly named for the burs surrounding the acorn cap, produces one of the largest acorns in the genus *Quercus*, hence the term "macro" in the species epithet. It is the best adapted of all native U.S. oaks to prairie conditions and can often become 5 feet in diameter and 350 years of age. It was named the centennial oak in Kansas in 1961 because it grows throughout the state.

Chinquapin oak (*Q. muhlenbergii*) also is well adapted to prairie soils and is found often on rocky hillsides and along stream banks. This medium-size oak is very tolerant of limestone soils with a high pH, and frequently reaches nearly 50 feet tall, even in the high plains of Texas. A closely related species, is chestnut oak (*Q. montana* formerly *Q. prinus*). This oak, often reaching in excess of 70 feet, has glossy, dark green leaves with heavily serrated leaf margins. Acorns are large, sweet and relished by squirrels. Native from Maine to Alabama, it is tolerant of soils in the heartland and grows quite well on poor, dry, upland sites.

Shumard oak (*Q. shumardii*) belongs to the red oak group and can be found among bur and chinquapin oak stands in eastern Kansas. It is common near streams and along river bottom sites, often reaching more than 75 feet, and is sold as red oak by the lumber industry. It can be a bit more difficult to grow as a straight, young tree in the nursery and does not transplant as successfully as pin oak (*Q. palustris*). However, it is more tolerant of high pH soils and drier sites, and forms a broad head similar to other red oaks. Pin oak cannot be recommended west of U.S. Highway 81 because of poor tolerance to high pH. Lime-induced iron chlorosis frequently causes the tree to become lemon yellow. The epithet "palustris" refers to wet soils to which it is best adapted, hence pin oaks are often planted successfully in poorly drained, clay soils where they may reach a height of 80 feet or more.

Shingle oak (*Q. imbricaria*), although not common in eastern Kansas, is found sparsely in the northeastern part of the state. It can be difficult to find in the trade. The small acorns are quickly taken by birds and squirrels. It is somewhat slow growing, has elliptic leaves without lobes, and shows a tinge of fall color, some being deep maroon in a decent fall.

An introduced species, sawtooth oak (*Q. acutissima*), somewhat new to our region, is fast growing and tolerant of drought and clay soils. Hardiness is generally limiting at -20°F, but a specimen is known to exist in Blair, Nebraska where temperatures drop even further. It is native to Japan, Korea and China. In experiment station tests of Shumard, shingle

and sawtooth oaks, both sawtooth and shingle oak survived well at western Kansas sites of Hays, Tribune and Garden City (Figure 1). Although sawtooth oak survived at all sites, Shumard and shingle oak grew faster at most western Kansas sites, except in the extreme northwest portion of the state in Colby.

Swamp white oak (*Q. bicolor*) has performed quite well in the plains and is reportedly easier to transplant than white oak (*Q. alba*). Native from Quebec to Georgia and west to Michigan and Arkansas, it grows in low lying, swampy areas and along stream banks. Although it prefers acid soils and a moist growing environment, it tolerates drier sites and grows well in the park system in Wichita. Its lustrous, dark green upper leaf surface contrasts vividly with a whitish, tomentose lower surface; hence the term bicolor oak.

White oak (*Q. alba*), normally a forest tree, is not found in urban planting often due to its reputed transplanting difficulty, but it is used occasionally in parks and for street plantings in eastern Kansas. Native from Maine to Missouri, it grows to at least 75 feet tall with a massive trunk and open, rounded crown. Its species epithet "alba" or "white" refers to the light color of the bark. Foliage resembles the lobed appearance of English oak and often exhibits a reddish fall color.

English oak (*Q. robur*) is a large, broadly-rounded tree widely used in Europe and surprisingly adapted to the Plains states. Several large specimens growing in Kinsley, Kansas, attest to its tolerance as a rugged tree. Its 1-inch long, shiny brown acorns are quite distinctive and readily distinguish it from others of the white oak group. Occasional powdery mildew on leaves can be unsightly and stunting. Several upright cultivars (*Q. r. fastigiata*) are available and offer handsome landscape forms. Hybrids with other white oaks occasionally display a rusty red fall color.

Water oak (*Q. nigra*) has been observed as far north as Wichita, although it would be more at home in eastern Oklahoma and Texas. The tree is almost evergreen, containing narrow, obovate semi-evergreen leaves which offer a near-live oak appearance. The species is weak-wooded and limbs can break in wind, snow and ice.

Willow oak (*Q. phellos*), also a narrow-leaved species, can become a tree 40 to 60 feet high, even 90 feet under ideal conditions. Often suggested for wet conditions and acid soil, the species has been grown west of Wichita. The narrow, fine-textured foliage is bright green, changing to yellow and occasionally russet-red in autumn.

Specimens of the rare and unusual *Q. cerris* (Turkish or Turkey oak) are surviving near the civic center in Wichita. Usually unknown in North America outside arboreta and botanic gardens, this species resembles sawtooth oak (*Q. acutissima*) with its 1-inch long acorns enclosed half their length with a cup of reflexed scales. A bit winter tender, one of the three specimens was damaged by cold temperatures and was removed a few winters ago.

An unusual oak, native to the plains of Texas, is the well known native Texas Shumard oak (*Q. buckleyi*, formerly *Q. texana*). Sometimes it is grown as multi-stemmed trees with fine textured, deeply cut leaves with brilliant fall colors. This oak occasionally hybridizes with *Q. shumardii* in central Texas where the two species overlap (2).

A member of the white oak group, and a rare evergreen which survives in the southern great plains, is live oak, also known as escarpment live oak, scrub live oak and West Texas live oak (*Q. fusiformis*). The native range of the species extends as far north as the Quartz mountains in southwest Oklahoma. Seed collected there in the early 1980's has produced trees now bearing acorns at the Horticulture Research Center in Wichita.

Hybrids of the coast live oak (*Q. virginiana*) and Post oak (*Q. stellata*) occur on the Texas A & M University campus. A small specimen is growing successfully in our trials at Wichita but is a shrubby semi-evergreen tree.

Other miscellaneous oaks not mentioned and various hybrids can be grown in the Plains states. Given good care, with the proper site and a little patience, oaks offer very durable additions to landscapes, park systems and other urban plantings, even in the prairie.

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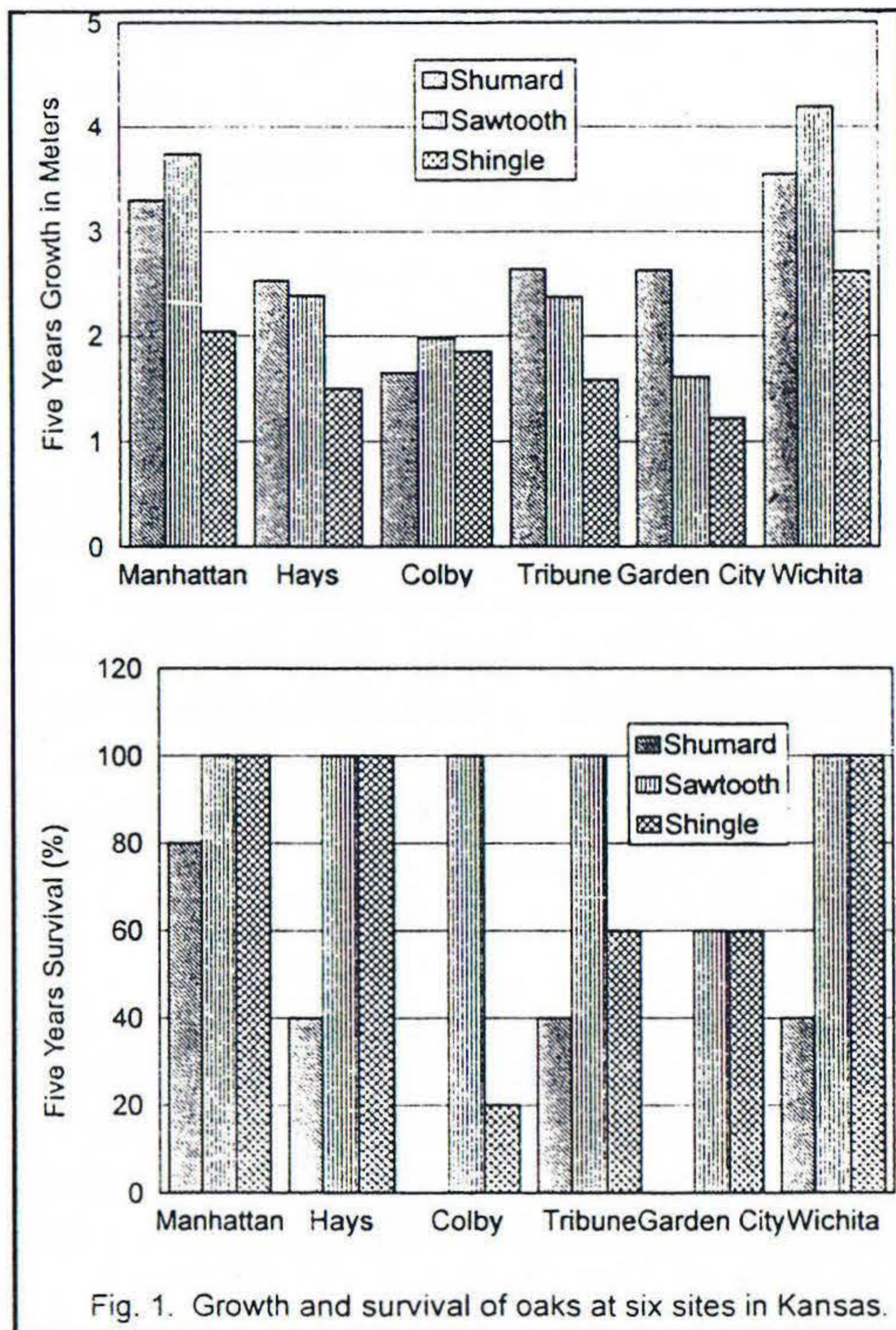


Fig. 1. Growth and survival of oaks at six sites in Kansas.

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