

Elm

The elm (*Ulmus* species) is probably best known as the American elm (*Ulmus americana*) because at one time it was used extensively along the streets of America. There are other species besides the American elm, and some are hardy in South Carolina except along the coast from Charleston south to Savannah, Georgia.



Mature American elms (*Ulmus americana*) arching over street.

Joseph O'Brien, USDA Forest Service. Image 1301077.
www.ipmimages.org. 11/11/04.

Mature Height/Spread

While most species reach 30 to 70 feet in height, and 30 to 60 feet in width, the American elm species will grow 80 to 130 feet high and 60 to 120 feet wide.

Growth Rate

Most elms grow rapidly and have a moderate to long life span.

Ornamental Features

Probably the most notable feature of most elms is the vase-shaped, upright form. Some are rounded and weeping.

They flower at different times, depending on the species. The flower is small and not showy, but those that bloom in early spring do so before leaves appear, adding interest to an already handsome silhouette. Leaves hide flowers that bloom in summer or fall. Fall leaf color of many species is showy yellow, while others may be yellow to reddish-purple. Fruit formed in the fall are winged and green to russet-colored. Seed are dispersed by wind.

The Chinese or lacebark elm (*U. parvifolia*) has attractive exfoliating bark that shows colors of gray, green, orange and brown. The bark of other species is not outstanding.



Chinese elm (*Ulmus parvifolia*) bark.

Karen Russ, ©HGIC, Clemson Extension

Landscape Use

The American elm was once the favorite shade tree in the United States. It is large, tough and long-lived and, with its arching form, was favored as a street tree, as well as a lawn specimen.

In the last few decades, however, millions of elms of different species have been killed by Dutch elm disease, both in the United States and Europe. The fungus that causes the disease is spread by certain species of the elm bark beetle. Although many elms have survived, the disease eventually kills those trees that are susceptible unless the beetle is controlled by sanitation, spraying and pruning.

Some American elms, and other elm species, that have survived and have not been infected are considered resistant. Clones of these resistant American elms and hybrids of resistant species are being developed, produced and used to replace the old trees that were lost. Even though the use of all elms has diminished because of Dutch elm disease, the elm may regain its favored status with the introduction of these new resistant selections.

Elms prefer full sun to part shade. Although they grow best when grown in moist, well-drained, fertile soil, they adapt to most soil conditions - wet or dry, alkaline or acidic.

Because they tolerate urban conditions, they are good selections for street trees. Their roots are shallow, however, and can cause concrete sidewalks to buckle. Root barriers should be installed when planting in tight areas.

Select trees with major branches spaced along one trunk. Good spacing may require pruning to develop strong structure. It may also be necessary to remove major limbs that are less than half the diameter of the trunk. Prune low, drooping branches, especially when trees are used in high-traffic areas.

Problems

The most serious problem encountered with elms is Dutch elm disease (DED), which is spread by elm bark beetles. Asian elms are very resistant to this disease, but most European and North American elms are not. The bark beetles are attracted to weakened trees, so it is important to maintain the health of existing trees. Fungicide injection and insecticides are often used to protect historic or valuable older specimens.

Elm yellows is a lethal disease of elms caused by a phytoplasma, a bacteria-like microorganism. The disease is often called elm phloem necrosis because the phloem becomes infected and essentially starves the tree of nutrients. Elm yellows is spread by

leafhoppers and root grafts between nearby trees. Trunk injections with tetracycline may slow the progress of elm yellows.

Cultivars of *Ulmus americana*

Only the cultivars of American elm that have shown resistance to Dutch elm disease are listed here:

- 'New Harmony' – A clone of the old American elm was developed and released by the U.S. National Arboretum in Washington, D.C. Grows to 68 feet tall and 72 feet wide, and has a broadly V-shaped crown. Disease resistant to DED, but not as much as with 'Valley Forge'. Resistant to elm leaf beetles, but susceptible to elm yellows.
- 'Valley Forge' – A US National Arboretum release. Grows 60+ feet tall and 40 feet wide with the classic, upright arching, vase-shaped form. Very disease resistant to DED and high resistance to elm leaf beetles, but susceptible to elm yellows. Golden yellow fall color.
- 'Jefferson' – A US National Arboretum release. Grows 68 feet tall and 50 feet wide with a classic vase-shaped crown. Highly resistant to DED and elm leaf beetles. Highly susceptible to elm yellows.
- 'Princeton' – This cultivar has large leathery leaves and grows exceptionally fast. Moderate disease resistance to DED. Grows to 60 to 70 feet tall and 30 to 40 feet wide.
- 'American Liberty' – This is a vigorous, fast-growing tree that grows 60 to 100 feet in height and width. It grows in an upright vase-shaped form. Disease resistance to DED is not as high as with 'Valley Forge' and 'New Harmony'.

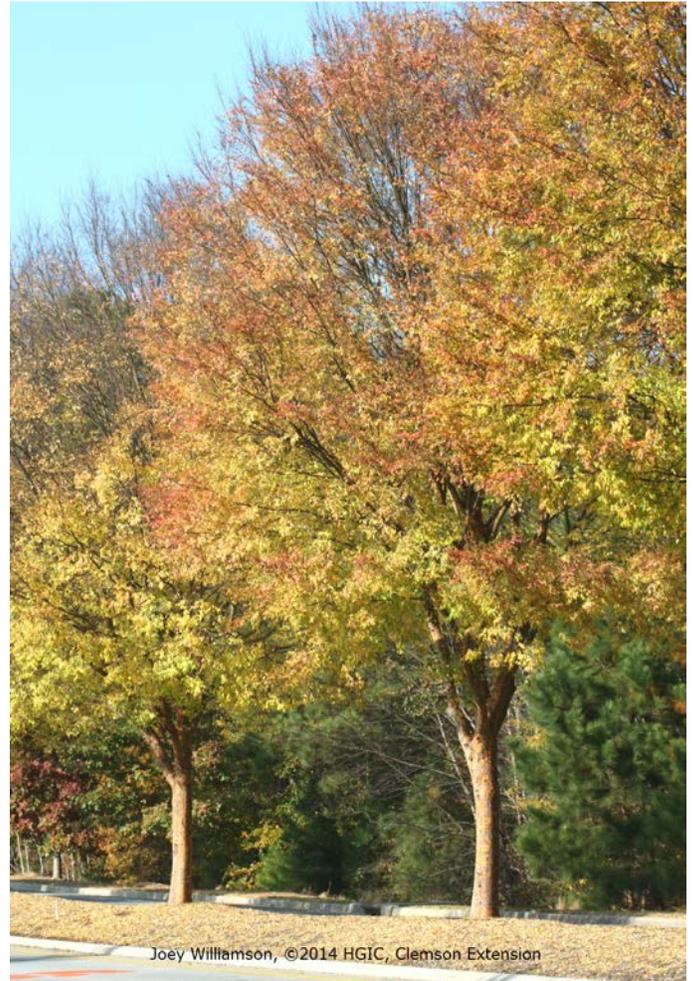
Chinese Elm (*Ulmus parvifolia*) – The Chinese or lacebark elm has its origin in China, Japan and Korea. It forms a graceful, upright, rounded canopy of long, arching branches. Some grow in typical vase-shaped form 40 to 50 feet high and 35 to 50 feet wide. This tree has beautiful exfoliating bark.

Chinese elm is a desirable street, park or landscape tree. It is a very drought and heat tolerant species, and grows in most soil types as long as they are well-drained. It possesses very

high resistance to Dutch elm disease and to elm leaf beetles. Chinese elm has become somewhat invasive from landscape plantings further north in the United States because of the wind-blown, winged fruit spreading the seed.

Cultivars of *Ulmus parvifolia*

- ®Allee (PP7552 ‘Emer II’) – A University of Georgia release. Grows to 50 feet tall and 35 feet wide with an upright, arching vase-shape.
- ®Athena (PP7551 ‘Emer I’) – A University of Georgia release. Grows to 30 feet tall and 35 feet wide, giving the tree a broadly rounded form.
- ®Bosque (PP11295 ‘UPMTF’) – Canopy form is upright pyramidal to broadly oval; grows to 45 feet tall and 30 feet wide.
- ‘Drake’ – This cultivar is a fast growing tree that retains its dark green foliage longer in the fall than the species. Its bark begins to exfoliate at an early age. Grows to 40 feet tall and 50 feet wide. Best grown in Southern climates.
- ®Everclear (PP17,665 ‘BSNUPF’) – This cultivar has a columnar to narrow vase growth habit and grows to 40 feet tall and 15 feet wide.
- ‘Dynasty’ – A US National Arboretum introduction. Grows to 40 feet tall and wide with a rounded canopy form.
- ‘Frontier’ – A US National Arboretum release and is a hybrid between *U. parvifolia* and *U. carpinifolia*. It has high resistance to DED and moderate resistance to elm leaf beetles. It grows to 40 feet tall and 30 feet wide.



Fall color on ‘Allee’ lacebark elm (*Ulmus parvifolia* ‘Allee’) planted in a highway median.

Joey Williamson, ©2014 HGIC, Clemson Extension

Revised by Joey Williamson, HGIC Horticulture Extension Agent, Clemson University (11/14). Originally prepared by Debbie Shaughnessy, HGIC Information Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. (New 06/99. Images added 11/06 & 11/14.)

This information is supplied with the understanding that no discrimination is intended and no endorsement of brand names or registered trademarks by the Clemson University Cooperative Extension Service is implied, nor is any discrimination intended by the exclusion of products or manufacturers not named. All recommendations are for South Carolina conditions and may not apply to other areas. Use pesticides only according to the directions on the label. All recommendations for pesticide use are for South Carolina only and were legal at the time of publication, but the status of registration and use patterns are subject to change by action of state and federal regulatory agencies. Follow all directions, precautions and restrictions that are listed.