



Carpinus caroliniana American Hornbeam¹

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INTRODUCTION

A handsome tree in many locations, the tree slowly reaches a height and spread of 20 to 30 feet (Fig. 1). It will grow with an attractive open habit in total shade, but be dense in full sun. The muscle-like bark is smooth, gray and fluted. Ironwood has a slow growth rate and is reportedly difficult to transplant from a field nursery (although 10-inch-diameter trees were moved with a 90-inch tree spade during the winter in USDA hardiness zone 8b with no problem) but is easy from containers. The fall color is faintly orange to yellow and stands out in the landscape or woods in the fall. Brown leaves occasionally hang on the tree into the winter.

GENERAL INFORMATION

Scientific name: *Carpinus caroliniana*

Pronunciation: kar-PYE-nus kair-oh-lin-ee-AY-nuh

Common name(s): American Hornbeam, Blue-Beech, Ironwood

Family: *Betulaceae*

USDA hardiness zones: 3 through 9A (Fig. 2)

Origin: native to North America

Uses: Bonsai; hedge; wide tree lawns (>6 feet wide); medium-sized tree lawns (4-6 feet wide); near a deck or patio; screen; shade tree; specimen; sidewalk cutout (tree pit); residential street tree

Availability: somewhat available, may have to go out of the region to find the tree

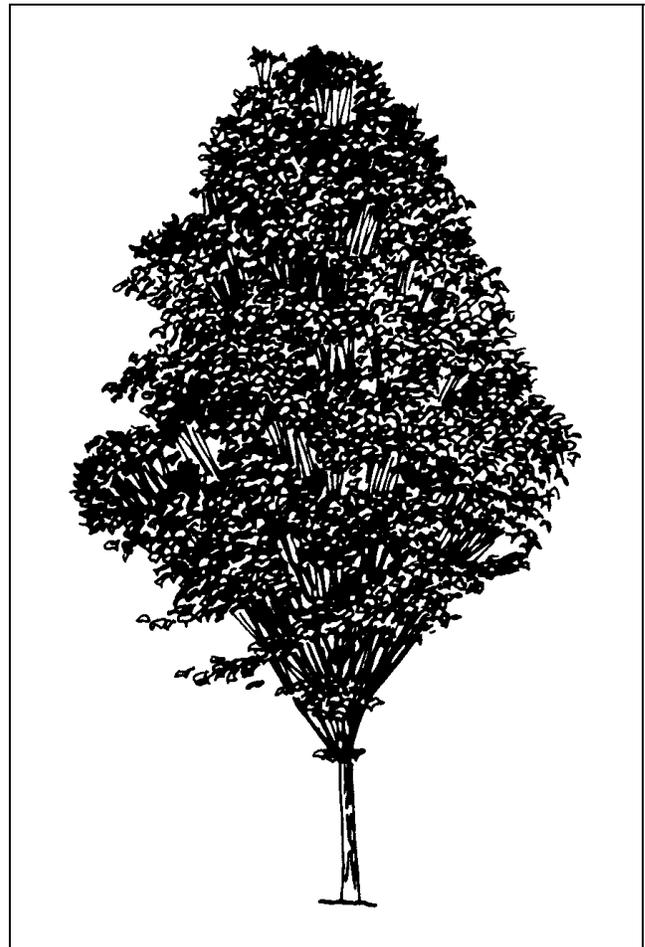


Figure 1. Young American Hornbeam.

DESCRIPTION

Height: 20 to 30 feet

Spread: 20 to 30 feet

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Figure 2. Shaded area represents potential planting range.

Crown uniformity: symmetrical canopy with a regular (or smooth) outline, and individuals have more or less identical crown forms

Crown shape: oval

Crown density: dense

Growth rate: slow

Texture: medium

Foliage

Leaf arrangement: alternate (Fig. 3)

Leaf type: simple

Leaf margin: double serrate

Leaf shape: oblong; ovate

Leaf venation: pinnate

Leaf type and persistence: deciduous

Leaf blade length: 2 to 4 inches

Leaf color: green

Fall color: orange; red; yellow

Fall characteristic: showy

Flower

Flower color: orange; yellow

Flower characteristics: inconspicuous and not showy; spring flowering

Fruit

Fruit shape: elongated; oval

Fruit length: .5 to 1 inch

Fruit covering: dry or hard

Fruit color: brown

Fruit characteristics: attracts birds; attracts squirrels and other mammals; inconspicuous and not showy; no significant litter problem

Trunk and Branches

Trunk/bark/branches: bark is thin and easily damaged from mechanical impact; droop as the tree grows, and will require pruning for vehicular or pedestrian clearance beneath the canopy; routinely grown with, or trainable to be grown with, multiple trunks; showy trunk; tree wants to grow with several trunks but can be trained to grow with a single trunk; no thorns

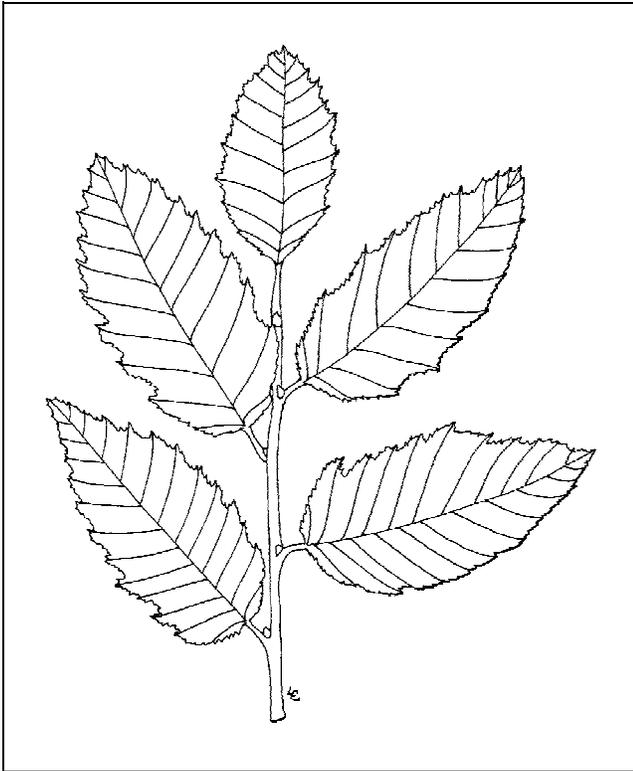


Figure 3. Foliage of American Hornbeam.

Pruning requirement: needs little pruning to develop a strong structure

Breakage: resistant

Current year twig color: brown; reddish

Current year twig thickness: thin

Culture

Light requirement: tree grows in part shade/part sun; tree grows in the shade; tree grows in full sun

Soil tolerances: clay; loam; sand; slightly alkaline; acidic; occasionally wet; well-drained

Drought tolerance: moderate

Aerosol salt tolerance: none

Soil salt tolerance: poor

Other

Roots: surface roots are usually not a problem

Winter interest: tree has winter interest due to unusual form, nice persistent fruits, showy winter trunk, or winter flowers

Outstanding tree: tree has outstanding ornamental features and could be planted more

Invasive potential: little, if any, potential at this time

Verticillium wilt susceptibility: not known to be susceptible

Pest resistance: long-term health usually not affected by pests

USE AND MANAGEMENT

With age, a multiple trunked, low branching specimen can be very attractive, showing off the bark and trunk form particularly well when lit at night. Tolerant of pruning, the tree can be used as a hedge plant or lends itself well for use as a screen due to the densely foliated crown. It can also be trained for street tree use by pruning to one central leader with small-diameter horizontal branches forming 'layers' of foliage in the crown. Some nurseries offer single-stemmed specimens. Well-suited for small spaces in the shade or sun, ironwood is tolerant of occasional flooding. The wood is very hard and strong and makes a great tree for climbing if allowed to grow with low branches intact. The wood dulls wood working tools quickly. Nutlets and buds are eaten by many birds and squirrels. If transplanting from the field, do it in the spring.

It performs well even in areas inundated with water for several days to a week or two once it is established. Although moderately drought-tolerant, it is probably best to provide even established trees with some irrigation during dry spells in the south. Ironwood grows in sun or shade (as an understory tree in the woods) and tolerates most soils, including wet, but not alkaline.

Pests

Relatively few insects attack hornbeam. Maple phenacoccus forms white cottony masses on the undersides of the leaves.

Diseases

None are normally very serious. Several fungi cause leaf spots on *Carpinus*. Leaf spots are not serious so control measures are usually not needed.

Canker, caused by several fungi, causes infected branches to dieback and entire trees die if the trunk is infected and girdled. Severely infected trees can not be saved and infected branches are pruned out. This could limit usefulness in parts of the Deep South.