



Carpinus betulus European Hornbeam¹

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INTRODUCTION

The species is not normally grown but it reaches 60 feet tall and spreads 40 feet preferring well-drained soil (Fig. 1). Cultivars are more common than the species. The cultivar 'Fastigiata' is most often offered by nurseries and is a popular street tree. The species tolerates a pH above 7.0. The plant grows slowly, is shallow rooted, and it can branch low to the ground. The crown is finely branched, densely foliated and forms a beautiful oval or vase in the landscape. European hornbeam has yellow fall color and enough pruning tolerance to be a hedge, tall screen or topiary. It was and is the plant of choice for clipped screens and hedges in English and early American gardens.

GENERAL INFORMATION

Scientific name: *Carpinus betulus*

Pronunciation: kar-PYE-nus BET-yoo-lus

Common name(s): European Hornbeam

Family: *Betulaceae*

USDA hardiness zones: 4 through 7 (Fig. 2)

Origin: not native to North America

Uses: Bonsai; hedge; large parking lot islands (> 200 square feet in size); wide tree lawns (>6 feet wide); medium-sized parking lot islands (100-200 square feet in size); medium-sized tree lawns (4-6 feet wide); recommended for buffer strips around parking lots or for median strip plantings in the highway; screen; shade tree; small parking lot islands (< 100 square feet in size); narrow tree lawns (3-4 feet wide); specimen; sidewalk cutout (tree pit); residential street tree

Availability: grown in small quantities by a small number of nurseries

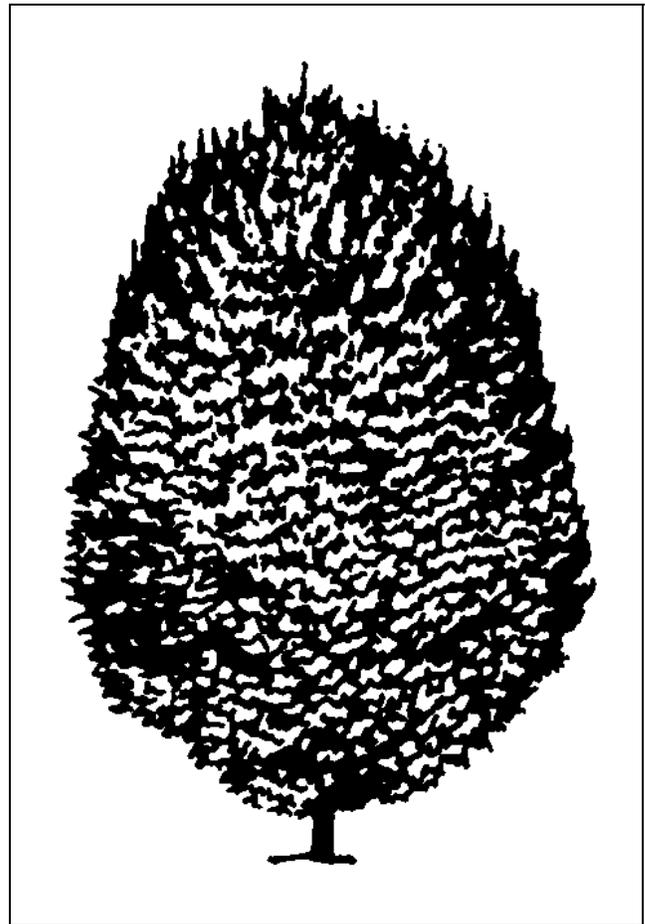


Figure 1. Middle-aged European Hornbeam.

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Figure 2. Shaded area represents potential planting range.

DESCRIPTION

Height: 40 to 60 feet
Spread: 35 to 40 feet
Crown uniformity: irregular outline or silhouette
Crown shape: oval; vase shape
Crown density: dense
Growth rate: slow
Texture: fine

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: yellow
Fall characteristic: showy

Flower

Flower color: white
Flower characteristics: inconspicuous and not showy; spring flowering

Fruit

Fruit shape: oval
Fruit length: < .5 inch
Fruit covering: dry or hard
Fruit color: brown
Fruit characteristics: attracts birds; inconspicuous and not showy; no significant litter problem; persistent on the tree

Trunk and Branches

Trunk/bark/branches: 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
Pruning requirement: needs little pruning to develop a strong structure

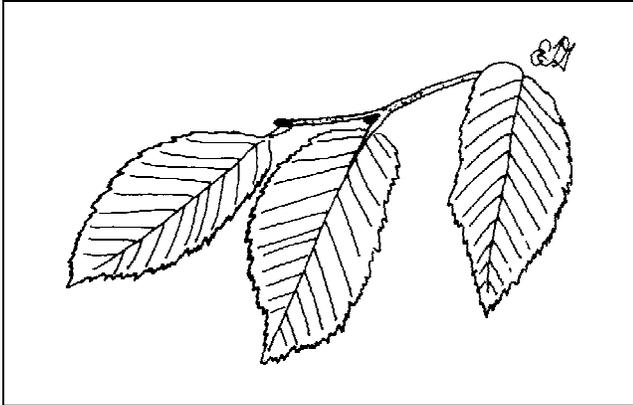


Figure 3. Foliage of European Hornbeam.

Breakage: resistant

Current year twig color: brown

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; acidic; occasionally wet; alkaline; well-drained

Drought tolerance: high

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

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: not known to be susceptible

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

USE AND MANAGEMENT

The tree lends itself well for use as a screen due to the densely foliated crown and low, dense branching. It can also be trained to one central leader and used as a fine street tree, but will benefit from occasional irrigation in a prolonged drought, although severe drought will not kill the tree, but could cause die-back. There are old plants in the south which look great, having received no irrigation in recent droughts. These plants were observed in areas where soil space

was not limiting and roots were allowed to expand unhindered by urban structures like curbs, pavement and sidewalks.

Lower branches should be removed early if using it for a street tree but with lower branches intact it makes a wonderful climbing tree. The cultivars are usually very branchy and form a dense crown too thick to climb. The wood is very hard and strong and dulls wood working tools quickly. Fruit and buds are eaten by many birds.

It is reportedly difficult to transplant which, along with slow growth, probably accounts for its lack of use. Transplant from the field in the spring. But it has most of the attributes commonly associated with a good urban tree and should be planted more.

There are a number of useful cultivars of European Hornbeam but they may be hard to find, except 'Fastigiata': 'Asplenifolia' - deeply lobed leaves; 'Columnaris' - narrow, dense growth habit, similar to and often confused with 'Fastigiata'; 'Fastigiata' - is generally available, 30 to 40 feet tall, dense, upright when young but spreading somewhat with age, can be used as an unpruned screen due to its resistance to wind, also very useful as a street tree, fine branches; 'Globosa' - rounded growth habit; 'Horizontalis' - flat topped; 'Incisa' - leaves deeply toothed, small leaves; 'Pendula' - weeping habit; 'Purpurea' - young leaves purplish; 'Pyramidalis' - upright.

Pests

Relatively few insects attack European hornbeam. Maple phenacoccus forms white cottony masses on the undersides of the leaves. Two-lined chestnut borer can cause dieback.

Diseases

None are normally very serious. Several fungi cause leaf spots on Hornbeam. 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 cannot be saved but infected branches are pruned out.

Powdery mildew causes a white powdery growth on the leaves. The disease is not common on *Carpinus*.