

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. 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: 4A through 7B (Fig. 2)

Origin: not native to North America

Invasive potential: little invasive potential

Uses: specimen; hedge; screen; street without sidewalk; parking lot island < 100 sq ft; parking lot island 100-200 sq ft; parking lot island > 200 sq ft; sidewalk cutout (tree pit); tree lawn 3-4 feet wide; tree lawn 4-6 feet wide; tree lawn > 6 ft wide; Bonsai; shade; highway median

Availability: not native to North America

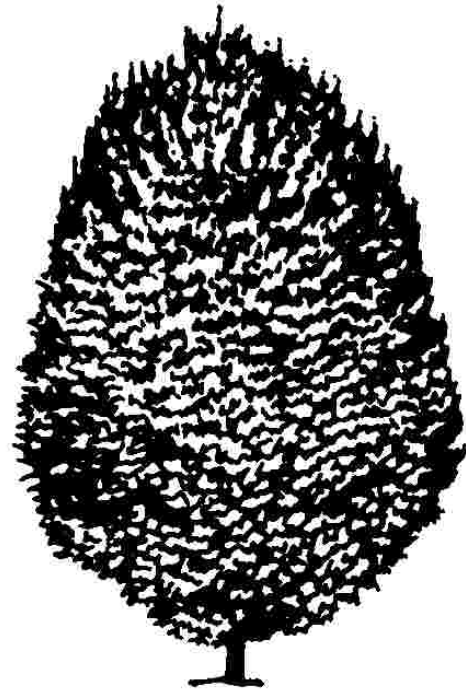


Figure 1. Middle-aged *Carpinus betulus*: European Hornbeam

Description

Height: 40 to 60 feet

Spread: 35 to 40 feet

Crown uniformity: symmetrical

Crown shape: oval, vase

Crown density: dense

Growth rate: slow

Texture: fine

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Figure 2. Range

Foliage

Leaf arrangement: alternate (Fig. 3)

Leaf type: simple

Leaf margin: double serrate

Leaf shape: ovate, oblong

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/cream/gray

Flower characteristics: not showy

Fruit

Fruit shape: oval

Fruit length: less than .5 inch

Fruit covering: dry or hard

Fruit color: brown

Fruit characteristics: attracts birds; not showy; fruit/leaves not a litter problem

Trunk and Branches

Trunk/bark/branches: branches droop; showy; can be trained to one trunk; thorns

Pruning requirement: little required

Breakage: resistant

Current year twig color: brown

Current year twig thickness: thin

Wood specific gravity: unknown

Culture

Light requirement: full sun, partial sun or partial shade, shade tolerant

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

Drought tolerance: high

Aerosol salt tolerance: none

Other

Roots: not a problem

Winter interest: yes

Outstanding tree: yes

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: resistant

Pest resistance: resistant to pests/diseases

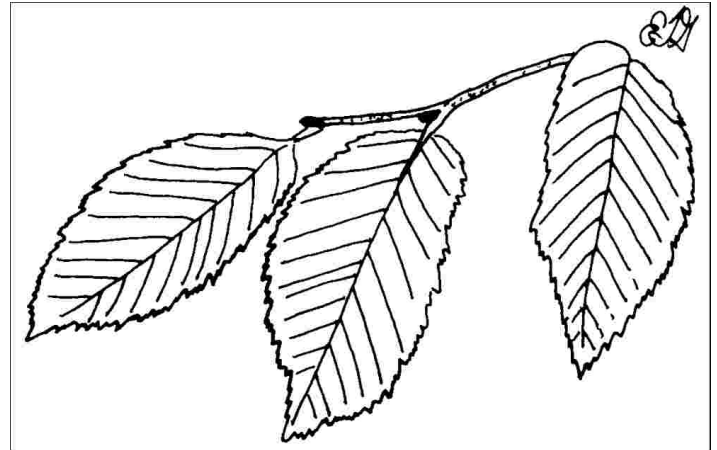


Figure 3. Foliage

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.