Introduction

‘Fastigiata’ European hornbeam, the most common cultivar sold, grows 30 to 40 feet tall and 20 to 30 feet wide, without a central leader but instead fans out into a very densely foli ated, columnar or oval-shaped tree, making it ideal for use as a hedge, screen, or windbreak. The 1.5- to 3.5-inch-long leaves are dark green through the summer, fading to yellow in the fall. The smooth, grey, rippling bark shields the extremely hard, strong wood. This wood is so solid it was reportedly used by the ancient Romans to make chariots, as well as being used by the American pioneers to make yokes for their oxen.

Carpinus betulus ‘Fastigiata’: ‘Fastigiata’ European Hornbeam

Edward F. Gilman and Dennis G. Watson

General Information

Scientific name: Carpinus betulus
Pronunciation: kar-PYE-nus BET-yoo-lus
Common name(s): ‘Fastigiata’ European Hornbeam
Family: Betulaceae
USDA hardiness zones: 5A through 8B (Fig. 2)
Origin: not native to North America
Invasive potential: little invasive potential
Uses: parking lot island < 100 sq. ft.; parking lot island 100–200 sq. ft.; parking lot island > 200 sq. ft.; container or planter; highway median; urban tolerant; specimen; espalier; hedge; screen; street without sidewalk; sidewalk cutout (tree pit); tree lawn 3–4 feet wide; tree lawn 4–6 feet wide; tree lawn > 6 ft. wide; Bonsai
Availability: not native to North America

Figure 1. Middle-aged Carpinus betulus ‘Fastigiata’: ‘Fastigiata’ European Hornbeam
Credits: Ed Gilman

Figure 2. Range
**Description**

Height: 30 to 40 feet  
Spread: 15 to 20 feet  
Crown uniformity: symmetrical  
Crown shape: upright/erect, columnar, pyramidal  
Crown density: dense  
Growth rate: slow  
Texture: fine

**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

![Figure 3. Foliage](image)

**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 don't droop; not showy; typically 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  
Soil tolerances: sand; loam; clay; acidic; alkaline; well-drained; occasionally wet  
Drought tolerance: high  
Aerosol salt tolerance: none

**Other**

Roots: not a problem  
Winter interest: yes  
Outstanding tree: yes  
Ozone sensitivity: unknown  
Verticillium wilt susceptibility: resistant  
Pest resistance: resistant to pests/diseases

**Use and Management**

The tree is sold as tree-form for street tree use or low-branched for use as specimens and screens. Young trees will be quite narrow but they will broaden some with age, making them well adapted for planting in areas with limited horizontal space for crown development. It has been rated very highly in the Shade Tree Evaluation tests for street trees in Ohio. The upright branching habit makes pruning almost unnecessary during the service life of the tree, but, of course, the tree will not form a canopy over the street as do broad-spreading trees. European hornbeam tolerates clipping extremely well and has been used as a screening plant for centuries.

‘Fastigiata’ European hornbeam will grow in full sun or light shade on almost any well-drained soil, from dry and rocky to wet. It adapts to both acid and alkaline soil and is tolerant of drought, poor drainage, pollution, and urban conditions. There are specimens in the South that look great, having received no irrigation in recent droughts. These plants were observed growing in clay soil where soil space was not limiting, and roots were able to expand unhindered by urban structures like curbs, pavement and sidewalks. Due to the dense arrangement of leaves on the fine-textured, upright stems, pruning is seldom required once the proper branch-height clearance is established early in the life of the tree. Usually pest-free, it is considered a low maintenance tree.

Propagation is by grafting.

**Pests and Diseases**

Occasionally bothered by two-lined chestnut borer or trunk canker. Japanese beetle can eat significant quantities of foliage in parts of the upper South. May die back in severe...
drought in areas with limited soil space such as narrow tree lawns or parking lot islands. But it performs well without irrigation in areas with open soil where roots can grow unrestricted.