



Ghent University Botanical Garden

*Carpinus* L.  
*Ostrya* Scop.  
*Ostryopsis* Decne.

(Betulaceae-Coryloideae)

**VEGETATIVE KEY TO SPECIES  
CULTIVATED IN WESTERN EUROPE**

**Jan De Langhe**

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## Vegetative key.

This key is based on vegetative characteristics, visible during the longest period of the year.

**Taxa treated in this key: see page 4.**

**Taxa referred to synonymy in this key: see page 4.**

**Questionable/frequently misapplied names: see page 4.**

### To improve accuracy:

- Use a hand lens to judge indumentum.
- Features like indumentum and colour, can decrease or change during autumn.
- Look at the entire plant. Young specimens and strong shoots give an atypical view.
- Beware of hybridisation, especially with plants raised from seed gathered in collections.

### Features based on:

- JDL herbarium specimens.
- living specimens, in various arboreta, botanic gardens and collections.
- literature:

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<http://www.plantentuin.ugent.be>

- 01 a Shrub, often suckering. Lamina LS with tiny glands (10× LENS). .... *Ostryopsis davidiana*  
 b Small to medium sized tree (rarely shrub). Lamina LS without tiny glands (10× LENS). ..... 02
- 02 a Lamina LS with teeth-forming tertiary veins evident **AND** bud scale arrangement spirally (bark shaggy: scaly/shredding into narrow strips; summer/winter shoot end with male catkins). ..... *Ostrya*  
 b Lamina LS with teeth-forming tertiary veins obscure, **AND/OR** bud scale arrangement in 4 lines, at least the basal ones (mature bark smooth, ridged or +/- scaly; summer/winter shoot end without male catkins). ..... *Carpinus*
- 03 a Lamina margin in apical half, with 2-5 secondary teeth between the primary teeth. Secondary veins often straight. .... *O. carpinifolia*  
 b Lamina margin in apical half, with 1-2 secondary teeth between the primary teeth. Secondary veins often curved in the middle. .... 04
- 04 a Secondary veins predominantly 11-15(-17)/side. Bud brownish at least in part, dull and pubescent (sometimes glabrescent at end of season). .... *O. virginiana*  
 b Secondary veins predominantly 9-13(-15)/side. Bud greenish, shiny and +/- glabrous. .... *O. japonica*
- 05 a Lamina US deeply impressed, with 15-35 secondary veins/side. Midvein glabrous or almost so. .... 06  
 b Lamina US smooth to +/- impressed, with 6-16 secondary veins/side. **IF** secondary veins 16-20/side, then midvein densely pubescent. .... 09
- 06 a Secondary veins 24-35/side. Lamina midvein length predominantly >15 cm. .... *C. fangiana (Distegocarpus)*  
 b Secondary veins 15-25/side. Lamina midvein length predominantly ≤15 cm long. .... 07
- 07 a Lamina base cordate. Lamina margin in apical half with 2-3 secondary teeth between the primary teeth. Secondary veins 15-20/side. .... *C. cordata (Distegocarpus)*  
 b Lamina rounded or to cordate at base. Lamina margin in apical half with 1-2 secondary teeth between the primary teeth. Secondary veins 18-25/side. .... 08
- 08 a Stipules persistent until October. Lamina base cuneate to rounded or cordate. .... *C. japonica (Distegocarpus)*  
 b Stipules falling soon. Lamina base cordate. .... *C. rankanensis (Distegocarpus)*
- 09 a Lamina midvein length predominantly ≤6 cm, **OR** lamina width ≤3 cm. .... 10  
 b Lamina midvein length predominantly >6 cm **AND** lamina width >3 cm. .... 14
- 10 a Lamina apex acute. .... *C. orientalis (Carpinus)*  
 b Lamina apex acute to acuminate. .... 11
- 11 a Young foliage reddish **AND** lamina margin acutely serrate with teeth bristly elongated. .... *C. omeiensis Hort. (Carpinus)*  
 b Young foliage not reddish, **OR IF SO** then not simultaneously with lamina margin acutely serrate and teeth bristly elongated. .... 12

- 12 a Lamina ovate. .... *C. turkzaninowii* (Carpinus)
- b Lamina lanceolate to oblanceolate. .... 13
- 13 a Lamina US with secondary veins slightly impressed. .... *C. kawakamii* (Carpinus)
- b Lamina US with secondary veins deeply impressed. .... *C. henryana* (Carpinus)
- 14 a Petiole length 15-30 mm AND lamina apex caudate. .... 15
- b Petiole length predominantly  $\leq 15$  mm, lamina apex acute to acuminate, rarely caudate.  
..... 16
- 15 a Lamina margin with primary teeth predominantly  $\leq 1$  mm and sub equal to secondary  
teeth. .... *C. viminea* (Carpinus)
- b Lamina margin with primary teeth  $> 1$  mm and conspicuously different from secondary  
teeth. .... *C. laxiflora* (Carpinus)
- 16 a Lamina margin with primary teeth bristly enlarged OR often 2x longer than secondary  
teeth. .... 17
- b Lamina margin with primary teeth not bristly enlarged, OR clearly  $< 1,5$ x longer than  
secondary teeth. .... 19
- 17 a Margin with teeth not or scarcely bristly enlarged. .... *C. pubescens* (Carpinus)
- b Margin with teeth clearly bristly enlarged. .... 18
- 18 a Petiole 10-15 mm. .... *C. tschonoskii* (Carpinus)
- b Petiole 10 mm. .... *C. eximia* (Carpinus)
- 19 a Lamina margin predominantly with 1-2(-3) secondary teeth between the primary teeth.  
..... *C. shensiensis* (Carpinus)
- b Lamina margin predominantly with 3(-more) secondary teeth between the primary  
teeth. .... 20
- 20 a Lamina margin with teeth blunt at apex, base cordate. .... *C. xschuschaensis*
- b Lamina margin with teeth acute at apex, base rounded to obliquely subcordate. .... 21
- 21 a Tree, branches directed upwards. Bud +/- conical, 5-10 mm long, often  $\geq 1/2$  length  
petiole. .... *C. betulus* (Carpinus)
- b Shrub to small tree, branches spreading, shoot tips arching. Bud +/- ovoid,  $< 5$  mm  
long,  $< 1/3$  length petiole. .... *C. caroliniana* (Carpinus)

### Taxa treated in this key.

*Carpinus betulus*  
*Carpinus caroliniana*  
*Carpinus cordata*  
*Carpinus eximia*  
*Carpinus fangiana*  
*Carpinus henryana*  
*Carpinus japonica*  
*Carpinus kawakamii*  
*Carpinus laxiflora*  
*Carpinus omeiensis* Hort.  
*Carpinus orientalis*  
*Carpinus pubescens*

*Carpinus rankanensis*  
*Carpinus shensiensis*  
*Carpinus* × *schuschaensis* (*C. betulus* × *C. orientalis*)  
*Carpinus tschonoskii*  
*Carpinus turczaninowii*  
*Carpinus viminea*  
  
*Ostrya carpinifolia*  
*Ostrya japonica*  
*Ostrya virginiana*  
  
*Ostryopsis davidiana*

### Taxa referred to synonymy in this key.

*Carpinus caucasica* = *Carpinus betulus*  
*Carpinus fargesii* = *Carpinus viminea*  
*Carpinus laxiflora* var. *macrostachya* = *Carpinus viminea*  
*Carpinus omeiensis* = *Carpinus omeiensis* Hort.  
*Carpinus polyneura* Hort. = *Carpinus viminea*  
*Carpinus turczaninowii* var. *coreana* = *Carpinus turczaninowii*  
*Carpinus turczaninowii* var. *stipulata* = *Carpinus turczaninowii*

### Questionable/frequently misapplied names.

Some plants in collections named *Carpinus londoniana* and *C. polyneura*, do not correspond to the descriptions and are, at least in part *Carpinus viminea*.

Plants in collections named *Carpinus omeiensis*, do not correspond to the descriptions and are regarded here as *C. omeiensis* Hort.

Plants in collections from wild source, named *Carpinus faginea*, *C. fargesiana*, *C. londoniana*, *C. mollicoma* and *C. polyneura* are not included in this key because the descriptions do not match and the fruits were insufficiently developed to support accurate identification.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	cm
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