



Cannabaceae

Aphananthe Planch.

Celtis L.

Pteroceltis Maxim.

Trema Lour.

VEGETATIVE KEY TO WOODY SPECIES IN EUROPEAN CULTIVATION

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(31 July 2013 - 22 September 2016)

Vegetative identification key.

Introduction:

This key is based on vegetative characteristics, and therefore also of use when fruits are absent.

- Use a 10x hand lens to evaluate leaf margin and pubescence in general.
- Look at the entire plant. Young specimens, shade and strong shoots give an atypical view.
- Beware of hybridisation, especially with plants raised from seed other than wild origin.

Taxa treated in this key: see page 5.

Names referred to synonymy: see page 5.

References:

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

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Grimshaw, J. & Bayton, R. - (2009) - **Cannabaceae** in *New Trees*, 976p.
Krüssmann, G. - (1977-1978) - **Ulmaceae** in *Handbuch der Laubgehölze*, 3 vol.
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RHS - (2014) - **Cannabaceae** in *The Hillier Manual of Trees & Shrubs*, 563p.
Sherman-Broyles, S.L., Barker, W.T. & Schulz, L.M. - (1997) - **Ulmaceae** in *Flora of North America* VOL.3 - and [online edition](#)

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

<http://www.arboretumwespelaar.be/EN>

KEY TO GENERA

- 01 a Lamina ovate AND LS secondary veins ending in teeth (10× LENS).
 genus *Aphananthe* *A. aspera*
- b Lamina elliptic to obovate, OR LS secondary veins not or only a few straight ending in teeth (10× LENS). 02
- 02 a Lamina ovate AND LS with a few secondary veins ending straight in teeth (10× LENS).
 genus *Pteroceltis* *P. tatarinowii*
- b Lamina elliptic to obovate, OR LS secondary veins anastomosing before margin (10× LENS). 03
- 03 a Lamina margin denticulate over whole length with 5-10 teeth/cm (10× LENS).
 genus *Trema* *T. orientalis*
- b Lamina margin (partly) entire, crenate, serrate or dentate except at base (10× LENS).
 genus *Celtis*

genus *Celtis*

KEY TO GROUPS

- 01 a Shoot armed with thorns. *C. pallida*
- b Shoot unarmed. 02
- 02 a Lamina margin predominantly entire to dentate/serrate in apical half. **Group A: see page 3**
- b Lamina margin predominantly dentate/serrate from apex to basal third. 03
- 03 a Lamina margin predominantly with 22-40 teeth/side. **Group B: see page 3**
- b Lamina margin often with 10-22 teeth/side. **Group C: see page 4**

GROUP A

Lamina margin predominantly entire to dentate/serrate in apical half.

- 01 a Lamina LS predominantly with 2-3 secondary veins/side (avoid <10 mm veins). 02
b Lamina LS with 3-4(-6) secondary veins/side (avoid <10 mm veins). 03
- 02 a Lamina narrowly ovate. *C. bungeana*
b Lamina (broadly) ovate to elliptic. *C. biondii*
- 03 a Lamina LS venation clearly densely pubescent (10× LENS). *C. julianae*
b Lamina LS glabrous or pubescence scattered on secondary veins (10× LENS). 04
- 04 a Lamina LS secondary veins 3-4/side. 05
b Lamina LS secondary veins 4-6/side. 06
- 05 a Lamina entire or dentate in apical half, with uppermost entire for 1(-2) cm. *C. sinensis*
b Lamina entire or dentate in apical half, with uppermost entire for 2-4 cm. *C. tetrandra*
- 06 a Lamina L/W predominantly $\geq 2/1$ *C. laevigata*
b Lamina L/W predominantly $< 2/1$ *C. tenuifolia*

GROUP B

Lamina margin predominantly dentate/serrate from apex to basal third, often with 22-40 teeth/side.

- 01 a Lamina predominantly (roundish) elliptic to obovate, all secondary veins reaching apical third. 02
b Lamina always (broadly) ovate to ovate oblong or ovate to elliptic, basal secondary veins not reaching apical third. 03
- 02 a Lamina apical teeth often 5-15 mm, apical secondary veins or their strong forks often ending in teeth. *C. koraiensis*
b Lamina apical teeth <3 mm, secondary veins and strong forks anastomosing before margin. *C. aurantiaca*
- 03 a Lamina ovate lanceolate to broadly ovate, secondary veins 4-5(-6)/side. ... *C. occidentalis*
b Lamina predominantly ovate lanceolate, OR secondary veins 3-4/side. 04
- 04 a Lamina LS venation clearly pubescent (10× LENS). 05
b Lamina LS venation almost glabrous or pubescent in vein axils (10× LENS). 06
- 05 a Lamina length/width 2/1-3/1. *C. australis*
b Lamina length/width $\leq 2/1$ *C. africana*

- 06 a Lamina basal third predominantly entire. **C. vandervoetiana**
 b Lamina basal third predominantly dentate. 07
- 07 a Shoot olive green to pale brown. Petiole 5-7 mm. **C. jessoensis**
 b Shoot dark brown. Petiole 7-12 mm. **C. chosoniana**

GROUP C
 Lamina margin predominantly dentate/serrate from apex to basal third,
 with 10-22 teeth/side.

- 01 a Lamina predominantly (roundish) elliptic to obovate, all secondary veins reaching apical third. 02
 b Lamina always (broadly) ovate to ovate oblong or ovate to elliptic, basal secondary veins not reaching apical third. 03
- 02 a Lamina apical teeth often 5-15 mm, apical secondary veins or their strong forks often ending in teeth. **C. koraiensis**
 b Lamina apical teeth <3 mm, secondary veins and strong forks anastomosing before margin. **C. aurantiaca**
- 03 a Lamina apex acute to caudate. 04
 b Lamina apex predominantly acute to acuminate. 05
- 04 a Lamina predominantly ovate lanceolate, secondary veins 3-4/side. **C. caucasica**
 b Lamina ovate lanceolate to broadly ovate, secondary veins 4-5(-6)/side. ... **C. occidentalis**
- 05 a Petiole <5 mm. **C. africana**
 b Petiole 5-10 mm. 06
- 06 a Shoot glabrous, petiole and lamina LS glabrous or almost so (10x LENS). **C. glabrata**
 b Shoot, petiole and lamina LS clearly pubescent (10x LENS). **C. tournefortii**

Taxa treated in this identification key:

Aphananthe aspera

Celtis africana
Celtis aurantiaca
Celtis australis
Celtis biondii
Celtis bungeana
Celtis caucasica
Celtis choseniana
Celtis glabrata
Celtis jessoensis
Celtis julianae
Celtis koraiensis

Celtis laevigata
Celtis occidentalis
Celtis pallida
Celtis sinensis
Celtis tenuifolia
Celtis tetrandra
Celtis tournefortii
Celtis vandervoetiana

Pteroceltis tatarinowii

Trema orientalis

Names referred to synonymy:

C. biondii var. *heterophylla* = *C. biondii*
C. douglasii = *C. laevigata* var. *reticulata*
C. edulis ~ *C. choseniana* ?
C. formosana = *C. tetrandra*
C. georgiana = *C. tenuifolia*
C. labilis = *C. sinensis*
C. laevigata var. *smallii* = *C. tenuifolia*
C. mississippiensis = *C. tenuifolia*

C. mississippiensis var. *pumila* = *C. occidentalis* var. *pumila*
C. mississippiensis var. *reticulata* = *C. laevigata* var. *reticulata*
C. nervosa = *C. sinensis*
C. pumila = *C. occidentalis* var. *pumila*
C. reticulata = *C. laevigata* var. *reticulata*
C. trinervia = *C. tetrandra*
C. yunnanensis = *C. tetrandra*

