



Ghent University Botanical Garden

***Sorbus* L. (Rosaceae)**

sensu stricto and including *Sorbus domestica*

VEGETATIVE KEY TO SPECIES IN CULTIVATION

Jan De Langhe

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Vegetative identification key.

Introduction:

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

- Use a 10x hand lens to check pubescence, leaf margin incisions and stipules.
- Look at the entire plant
- Beware of hybridisation, especially with plants raised from seed other than wild origin.

Abbreviations used in this key:

- **L/W** = length/width
- **LS** = lower surface
- **US** = upper surface

Taxa treated in this key: → [page 8](#).

Taxa referred to synonymy in this key: → [page 9](#).

Remarks: → [page 9](#).

References:

- JDL herbarium and [illustrations](#)
- living specimens, in various arboreta, botanic gardens and collections
- literature:

McAllister, H - (2005) - The genus *Sorbus*, 252p.

Bean, W.J. & Clarke, D.L. - (1980) - *Sorbus* in Bean's Trees and Shrubs hardy in the British Isles 4, p.399-494.

Krüssmann, G. - (1978) - *Sorbus* in Handbuch der Laubgehölze 3, p.348-361.

Lingdi, L., and Sponberg, S.A. - (2003) - *Sorbus* In Flora of China 9, p.144-170. – and [online edition](#)

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[**Plantentuin Universiteit Gent**](#)

[**Arboretum Wespelaar**](#)

KEY TO GROUPS

- 01 a Lateral leaflets predominantly in 1, 2 or 3 pairs. **Group A**
- b Lateral leaflets predominantly in 3-more pairs. 02
- 02 a Lateral leaflets predominantly in 3-8 pairs, OR often at least in part of the foliage in 6-8 pairs. 03
- b Lateral leaflets predominantly in 8-20 pairs. 05
- 03 a Lamina length predominantly ≤15 cm. **Group B**
- b Lamina length predominantly >15 cm. 04
- 04 a Lateral leaflet L/W ratio predominantly ≥3/1. **Group C** →page 3
- b Lateral leaflet L/W ratio predominantly ≤3/1 (or applicable to both). **Group D** →page 4
- 05 a Lateral leaflets at least in part of the foliage in >12 pairs. **Group E** →page 6
- b Lateral leaflets in 8-12 pairs. **Group F** →page 7

GROUP A Lateral leaflets predominantly in 1, 2 or 3 pairs.

- 01 a Leaf length <10 cm, lateral leaflet length <40 mm. ***S. macallisteri***
- b Leaf length 10-30 cm, lateral leaflet length 50-200 mm. 02
- 02 a Leaflet LS glabrous (10× LENS). ***S. harrowiana***
- b Leaflet LS brownish pubescent (10× LENS). ***S. helena***

GROUP B Lateral leaflets predominantly in 3-8 pairs. Lamina length predominantly ≤15 cm.

- 01 a Rhizomatous shrub ≤1m. 02
- b Shrub or small tree. 03
- 02 a Shrub 20-30 cm, lateral leaflet length predominantly 10-15 mm. ***S. poteriifolia***
- b Shrub 20 cm-100 cm, lateral leaflet length predominantly 15-20 mm. ***S. reducta***
- 03 a Stipules persistent, well developed, +/- reniform and dentate. ***S. gracilis***
- b Stipules soon caducous, OR reduced to small, not reniform and dentate. 04

04 a	Largest lateral leaflets L/W ratio >3/1.	<i>S. wallichii</i>
b	Largest lateral leaflets L/W ratio clearly <3/1.	05
05 a	Lateral leaflet apex gradually acute.	<i>S. sambucifolia</i>
b	Lateral leaflet apex +/- rounded to abruptly acute.	06
06 a	Bud purple with a bluish bloom, 15-20 mm.	<i>S. matsumurana</i>
b	Bud reddish brown, ≤10 mm.	07
07 a	Lateral leaflets in ≥7 pairs.	<i>S. monbeigii</i>
b	Lateral leaflets in (3-)4-5(-6) pairs.	08
08 a	Leaf length 10-22 cm.	<i>S. fansipanensis</i>
b	Leaf length predominantly <13 cm.	09
09 a	Rachis/petiole ratio <2/1.	<i>S. kurzii</i>
b	Rachis/petiole ratio >2/1.	<i>S. aff. kiukiangensis</i>

GROUP C
 Lateral leaflets predominantly in 3-8 pairs.
 Lamina length predominantly >15 cm, with lateral leaflet L/W ratio predominantly ≥3/1.

01 a	Lateral leaflets in 5-6 pairs.	02
b	Lateral leaflets in 6-8 pairs.	08
02 a	Terminal bud ovoid, reddish brown and very glossy and sticky.	<i>S. wilsoniana</i>
b	Terminal bud conical, greenish to reddish and usually not to slightly glossy/sticky.	03
03 a	Lateral leaflet apex gradually acuminate to caudate.	<i>S. commixta</i>
b	Lateral leaflet apex rounded to acute or abruptly acute to acuminate.	04
04 a	Terminal bud green in part.	05
b	Terminal bud reddish brown or purplish.	06
05 a	Lateral leaflet length 60-100 mm, leathery and thick.	<i>S. insignis</i>
b	Lateral leaflet length ≤60 mm, papery and thin.	<i>S. scopulina</i>
06 a	Bud purple with a bluish bloom. Leaflet apex obtuse.	<i>S. matsumurana</i>
b	Bud reddish brown. Leaflet apex acute to acuminate.	07
07 a	Lateral leaflet base rounded.	<i>S. discolor</i>
b	Lateral leaflet base cuneate.	<i>S. fosteri</i>

08 a	Lateral leaflet leathery <u>AND</u> margin recurved.	<i>S. keenanii</i>
	b Lateral leaflet papery, <u>AND/OR</u> margin predominantly flat.	09
09 a	Lateral leaflet apex gradually acuminate to caudate.	10
	b Lateral leaflet apex predominantly acute to obtuse or acute to (sub-)acuminate.	13
10 a	Lateral leaflet midvein/secondary vein winkle clearly >45°.	11
	b Lateral leaflet midvein/secondary vein winkle clearly ≤45°.	12
11 a	Lateral leaflets in 6-8 pairs.	<i>S. commixta</i>
	b Lateral leaflets in 6-9(-10) pairs.	<i>S. ulleungensis</i>
12 a	Leaf 25-35 cm, leaflet length 60-100 mm.	<i>S. americana</i>
	b Leaf predominantly ≤20 cm, leaflet length <60 mm.	<i>S. randaiensis</i>
13 a	Terminal bud greenish.	14
	b Terminal bud brown to red.	15
14 a	Terminal bud not glossy/sticky, rachis clearly grooved/winged.	<i>S. glaucophylla</i>
	b Terminal bud glossy/sticky, rachis not to scarcely grooved/winged.	<i>S. domestica</i>
15 a	Terminal bud ovoid, very sticky. Lateral leaflet apex acute to acuminate.	<i>S. wilsoniana</i>
	b Terminal bud conic, not sticky. Lateral leaflet apex obtuse to acute.	16
16 a	Lateral leaflet secondary veins clearly visible: impressed on US and elevated on LS (10× LENS).	<i>S. KR 6445F (S. aff. rehderiana)</i>
	b Lateral leaflet secondary veins slightly visible (10× LENS).	17
17 a	Lateral leaflets in 5-7 pairs.	<i>S. muliensis</i>
	b Lateral leaflets in 7-8(-9) pairs.	<i>S. rushforthii</i>

GROUP D
 Lateral leaflets predominantly in 3-8 pairs.
 Lamina length predominantly >15 cm, with lateral leaflet L/W ratio predominantly ≤3/1.

01 a	Short shoot lateral leaflets dentate in apical third.	02
	b Short shoot lateral leaflets dentate in apical half to dentate throughout.	11
02 a	Lateral leaflets in 3-5(-6) pairs <u>AND</u> base strongly oblique.	<i>S. fansipanensis</i>
	b Lateral leaflets in 5-8(-9) pairs, <u>OR</u> base rounded to cuneate.	03
03 a	Lateral leaflets in 7-8(-9) pairs.	04
	b Lateral leaflets in 5-7 pairs.	06

04 a	Lateral leaflet LS glabrous. (10× LENS).	<i>S. bulleyana</i>
b	Lateral leaflet LS clearly pubescent at least at midvein base.	05
05 a	Bud reddish brown with white pubescence.	<i>S. rushforthii</i>
b	Bud pale brown with rusty pubescence.	<i>S. KR 3647B</i>
06 a	Lateral leaflet base rather cuneate.	<i>S. ellipsoidalis</i>
b	Lateral leaflet base rather rounded.	07
07 a	Lateral leaflets rather +/- equal in size except basal ones.	<i>S. muliensis</i>
b	Lateral leaflets clearly decreasing in size from apex to base of the rachis.	08
08 a	Foliage US rather olive-green.	<i>S. olivacea</i>
b	Foliage US rather dark green to dark blue-green.	09
09 a	Terminal leaflet predominantly oblong.	<i>S. discolor</i>
b	Terminal leaflet predominantly elliptic.	10
10 a	Lateral leaflet LS with pubescence in basal part (10× LENS).	<i>S. carmesiana</i>
b	Lateral leaflet LS glabrous (10× LENS).	<i>S. pseudohupehensis</i>
11 a	Lateral leaflets in 4-6 pairs.	12
b	Lateral leaflets in 6-8 pairs, at least in part of the foliage.	16
12 a	Bud purple with a bluish bloom.	<i>S. matsumurana</i>
b	Bud green, reddish or brown.	13
13 a	Stipules small, rather linear.	<i>S. californica</i>
b	Stipules large, roundish to reniform.	14
14 a	Leaflet LS densely whitish-gray pubescent (10× LENS).	<i>S. esserteauiana</i>
b	Leaflet LS glabrous or slightly pubescent (10× LENS).	15
15 a	Lateral leaflet length >90 mm.	<i>S. sargentiana</i>
b	Lateral leaflet length <90 mm.	<i>S. wilsoniana</i>
16 a	Terminal bud sticky.	17
b	Terminal bud not sticky.	18
17 a	Lateral leaflet margin with 5-15 teeth/side.	<i>S. domestica</i>
b	Lateral leaflet margin with 15-30 teeth/side.	<i>S. decora</i>
18 a	Terminal bud green.	<i>S. HOWICK 1948 (S. aff. ovalis)</i>
b	Terminal bud reddish or brown to black.	19
19 a	Terminal bud becoming dark brown to black (often covered in pubescence).	<i>S. aucuparia</i>
b	Terminal bud becoming reddish/purplish.	20

- 20 a Petiole, rachis and leaflets LS with long whitish hairs (10× LENS). .. *S. cinereopubescens*
 b Petiole, rachis and leaflets LS almost glabrous (10× LENS). 21
- 21 a Terminal leaflet predominantly elliptic to obovate. *S. glabriuscula*
 b Terminal leaflet predominantly ovate or ovate to elliptic. 22
- 22 a Stipules ovate, elliptic or obovate and +/- dentate (10× LENS). *S. forrestii*
 b Stipules +/- linear or deeply lobed with +/- linear lobes (10× LENS). 23
- 23 a Stipules +/- linear (10× LENS). *S. rosea*
 b Stipules +/- linear and +/- lobed with linear lobes (10× LENS). *S. cashmiriana*

GROUP E

Lateral leaflets at least in part of the foliage in >12 pairs.

- 01 a Bud greenish to yellowish brown at least in part of the foliage. 02
 b Bud dark red to purplish or dark brown (sometimes densely covered with rusty hairs). 03
- 02 a Leaflet LS clearly rusty pubescent (10× LENS). *S. munda*
 b Leaflet LS glabrescent to glabrous (10× LENS). *S. glomerulata*
- 03 a Bud blackish. *S. frutescens*
 b Bud brown, reddish or purplish. 04
- 04 a Stipules often persistent and well developed at least in part of the foliage, 5-15 mm.05
 b Stipules soon caducous or reduced and predominantly ≤3 mm. 10
- 05 a Middle lateral leaflet predominantly >30 mm AND L/W ratio >3/1. 06
 b Middle lateral leaflet predominantly <30 mm AND/OR L/W ratio ≤3/1. 07
- 06 a Stipules +/-reniform, coarsely dentate. *S. scalaris*
 b Stipules not reniform, deeply lobed. *S. parvifructa*
- 07 a Leaflet US pubescent (10× LENS). *S. rinzenii*
 b Leaflet US glabrous. 08
- 08 a Leaflet US glossy, LS predominantly glabrous (10× LENS). *S. setschwanensis*
 b Leaflet US dull and LS pubescent (10× LENS). 09
- 09 a Short shoot lateral leaflet apex acute to acuminate. *S. eburnea*
 b Short shoot lateral leaflet apex obtuse. *S. koehneana*

10 a	Rachis and leaflet LS midvein with conspicuous long brown hairs (10× LENS).	S. rutilans
b	Rachis and leaflet LS midvein glabrescent or with curled/short rusty hairs.	11
11 a	Leaf length predominantly 15-20 cm.	12
b	Leaf length predominantly ≤15 cm.	13
12 a	Leaflets of largest leaves in ≤15 pairs.	S. bissetii
b	Leaflets of largest leaves in 16-20 pairs.	S. KR 5000 (S. aff. filipes)
13 a	Short shoot lateral leaflet apex conspicuously apiculate (10× LENS).	14
b	Short shoot lateral leaflet apex obtuse to acute (10× LENS).	15
14 a	Leaflets predominantly directed sideward.	S. vilmorinii
b	Leaflets predominantly directed upward.	S. pseudovilmorinii
15 a	Leaflet US and LS pubescent (10× LENS).	S. khumbuensis
b	Leaflet US and LS glabrous (10× LENS).	S. KR 5100A (S. aff. filipes)

GROUP F

Lateral leaflets in 8-12 pairs.

01 a	Leaflet US clearly pubescent.	S. hypoglauca
b	Leaflet US glabrous or glabrescent (10× LENS).	02
02 a	Rachis and leaflet LS glabrous to glabrescent (10× LENS).	03
b	Rachis and leaflet LS clearly brown/rusty pubescent (10× LENS).	07
03 a	Bud blackish.	S. frutescens
b	Bud greenish, brownish or purplish red.	04
04 a	Small shrub < 50 cm. Leaflet US glossy.	S. parva
b	Shrub or small tree. Leaflet US dull.	05
05 a	Middle lateral leaflet width ≤11 mm.	S. gonggashanica
b	Middle lateral leaflet width 10-15 mm.	06
06 a	Long shoot rachis grooved to narrowly winged.	S. bissetii
b	Long shoot rachis flat-winged.	S. hugh-mcallisteri
07 a	Leaf rather small, ≤15 cm long.	08
b	Leaf rather large, 15-20(-more)cm long.	10
08 a	Lateral leaflets rather distantly set.	S. vilmorinii
b	Lateral leaflets closely set to overlapping.	09

- 09 a Middle lateral leaflet L/W ratio $\leq 3/1$ **S. zayuensis**
 b Middle lateral leaflet L/W ratio $\geq 4/1$ **S. pteridophylla**
- 10 a Terminal bud ≤ 8 mm. **S. pseudovilmorinii**
 b Terminal bud often 10-15 mm. 11
- 11 a Lateral leaflets at least in part of the foliage entire or with a few teeth towards apex. 12
 b Lateral leaflets always dentate at least in apical half to apical third. 13
- 12 a Middle lateral leaflet L/W ratio 3/1-4/1. **S. lingshiensis**
 b Middle lateral leaflet L/W ratio $\leq 3/1$ **S. KR 6391 (S. aff. rehderiana)**
- 13 a Middle lateral leaflet predominantly dentate in apical half. **S. foliolosa**
 b Middle lateral leaflet predominantly dentate below apical half. **S. kongboensis**

Taxa treated in this identification key.

S. americana
S. aucuparia
S. bissetii
S. bulleyana
S. californica
S. carmesina
S. cashmiriana
S. cinereopubescens
S. commixta
S. decora
S. discolor
S. domestica > *Cornus domestica*
S. eburnea
S. ellipsoidalis
S. esserteauana
S. fansipanensis
S. foliolosa
S. forrestii
S. fosteri
S. frutescens
S. glabriuscula
S. glomerulata
S. gonggashanica
S. gracilis
S. harrowiana
S. helena
S. HOWICK 1948 (S. aff. ovalis)
S. hugh-mcallisteri
S. hypoglauca
S. insignis
S. keenanii
S. khumbuensis
S. aff. kiukiangensis
S. koehneana
S. kongboensis

S. KR 3647B
S. KR 5000 (S. aff. filipes)
S. KR 5100A (S. aff. filipes)
S. KR 6391 (S. aff. rehderiana)
S. KR 6445F (S. aff. rehderiana)
S. kurzii
S. lingshiensis
S. macallisteri
S. matsumurana
S. monbeigii
S. mulliensis
S. munda
S. olivacea
S. parva
S. parvifructa
S. poteriifolia
S. pseudohupehensis
S. pseudovilmorinii
S. pteridophylla
S. randaiensis
S. reducta
S. rinzenii
S. rosea
S. rushforthii
S. rutilans
S. sambucifolia
S. sargentiana
S. scalaris
S. scopulina
S. setschwanensis
S. ulleungensis
S. vilmorinii
S. wallichii
S. wilsoniana
S. zayuensis

Taxa referred to synonymy in this identification key.

S. apiculata McAll. = *S. hugh-mcallisteri*
S. dumosa = *S. scopulina*
S. pygmaea = *S. poterifolia*

S. rufoferruginea = *S. commixta*
S. serotina = *S. commixta*
S. wilfordii = *S. commixta*

Remarks.

Some more *Sorbus* taxa are in cultivation (among others: *S. amoena*, *S. gilgitana*, *S. rubescens*, *S. sitchensis*, *S. tianschanica* etc.), several represented by only one single specimen fide Hugh McAllister and not discussed in this work yet.

Some of Hugh McAllister personal comments:

Sorbus HOWICK 1948 (*S. aff. ovalis*) - A very attractive white fruited species which seems easy to grow. I haven't recorded a chromosome count but rather assume it is an apomict.

Sorbus KR 3647B - A *Discolores* apomictic tetraploid with regular crops of attractive white fruits. Somewhat smaller growing than *S. pseudohupehensis* and *S. glabriuscula*, more the stature of *S. forrestii* and *S. bulleyana*.

Sorbus KR 5000 (*S. aff. filipes*) - An apomictic tetraploid. Almost *S. cashmiriana*-sized fruits with crimson blotches and a very large number of leaflets.

Sorbus KR 5100A (*S. aff. filipes*) - Probably an autotetraploid of *S. pseudovilmorinii*. A very attractive small tree with the useful property of being apomictic.

Sorbus KR 6445F (*S. aff. rehderiana*) - This [and *Sorbus* KR 6391 (*S. aff. rehderiana*)] are *rehderiana*-like tetraploid apomicts which may have raised by autopolyploidy and hybridised with diploids to produce part of the huge range of apomicts found in the wild.

