



Ghent University Botanical Garden

## **Buxaceae**

*Buxus* L.

*Pachysandra* A.Michaux

*Sarcococca* Lindl.

### **VEGETATIVE KEY TO CULTIVATED SPECIES**

**Jan De Langhe**

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## Vegetative key.

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

**Taxa treated in this key: see page 5.**

**Taxa referred to synonymy in this key: see page 5.**

**Frequently misidentified taxa: see page 5.**

To improve accuracy:

- Use a hand lens to judge pubescence and venation.
- Remember to examine the entire plant. Young specimens and strong shoots give an atypical view.
- Beware of hybridisation, especially with plants other than wild origin.

Features based on:

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

Batdorf, L.R. - (2004) - Boxwood, An Illustrated Encyclopedia, 245 p.  
Bean, W.J. - (1980) - *Buxus* in Trees and Shrubs hardy in the British Isles VOL.1, p.460-465.  
Bean, W.J. - (1987) - *Pachysandra* in Trees and Shrubs hardy in the British Isles VOL.3, p.75-76.  
Bean, W.J. - (1981) - *Sarcococca* in Trees and Shrubs hardy in the British Isles VOL.4, p.326-330.  
Clarke, D.L. - (1988) - *Buxus* in Trees and Shrubs hardy in the British Isles supplement, p.128.  
Hillier, J. & Coombes, A. - (2002) - *Buxus* in The Hillier Manual of Trees & Shrubs, p.44-45.  
Krüssmann, G. - (1976) - *Buxus* in Handbuch der laubgehölze VOL.1, p.267-270.  
Krüssmann, G. - (1977) - *Pachysandra* in Handbuch der laubgehölze VOL.2, p.360-361.  
Krüssmann, G. - (1978) - *Sarcococca* in Handbuch der laubgehölze VOL.3, p.323-324.  
Laros, A.J. - (2007) - *Sarcococca*, overzicht van het sortiment, in Dendroflora VOL.43, p.134-140.  
Ohwi, J. - (1965) - *Buxaceae* in Flora of Japan, p.595.  
Sealy, J.R. - (1986) - A revision of the genus *Sarcococca* in Botanical Journal of the Linnean Society VOL.92, p.117-159.  
Shaw, J. - (2011) - New introductions from northern Vietnam: *Sarcococca bleddynii*, in The Plantsman Dec.2011, p.232-233.  
Van Trier, H. & Hermans, D. - (2005) - *Buxus*, 146 p.  
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<http://www.plantentuin.ugent.be>

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

KEY TO GENERA.

- 01 a Leaves usually +/- clustered at shoot end. Lamina margin dentate in apical half (some, usually less developed leaves with (almost) entire lamina margin may occur). ..... **Pachysandra**
- b Leaves +/- regularly arranged along the shoot. Lamina margin entire. .... 02
- 04 a Leaves opposite. .... **Buxus** (see page 3)
- b Leaves 1 per node (some shoots with (sub-)opposite leaves). .... **Sarcococca** (see page 4)

Key to genus *Pachysandra*.

- 01 a Lamina apex acute to acuminate. .... **P. axillaris**
- Petiole  $\leq 40$  mm. Inflorescence erect 25 mm, flowers white to pink. .... **P. axillaris** var. **axillaris**
- Petiole  $\geq 50$  mm. Inflorescence pendulous 25-50 mm, flowers red. .... **P. axillaris** var. **stylosa**
- b Lamina apex obtuse to acute. .... 02
- 02 a Shoot, petiole and lamina (soon) glabrous. Lamina length/width predominantly  $\geq 2/1$ .  
..... **P. terminalis**
- b Shoot, petiole, lamina venation and margin pubescent. Lamina length/width  $< 3/2$ .  
..... **P. procumbens**

Key to genus *Buxus*.

- 01 a Lamina length/width, at least in part of the leaves, 4/1-6/1(-7/1). ..... *B. wallichiana*  
 b Lamina length/width  $\leq 3/1$ (-4/1). ..... 02
- 02 a Lamina 20-50 × 5-15 mm; narrowly oblong-elliptic to narrowly obovate, largest width in or above the middle. .... *B. taxon-A*  
 b Lamina variable, IF narrowly elliptic to narrowly ovate, then  $\leq 20 \times 10$  mm. .... 03
- 03 a Lamina midvein length predominantly 35-70 mm. .... 04  
 b Lamina midvein length predominantly 8-35 mm. .... 05
- 04 a Shoots ascending and leaves spreading to directed upwards. Lamina thick leathery, midvein length predominantly 35-50 mm. .... *B. balearica*  
 b Shoots and leaves +/- pendulous. Lamina thin leathery, midvein length predominantly 40-70 mm. .... *B. henryi*
- 05 a Shoot glabrous (10× LENS). .... 06  
 b Shoot pubescent at least at first (10× LENS), later sometimes only in part of shoots (examine the entire plant). .... 10
- 07 a Lamina predominantly obovate to roundish, or broadly elliptic: midvein length/width 1/1-3/2. .... 08  
 b Lamina predominantly narrowly elliptic to narrowly oblong: midvein length/width 3/2-2/1. .... 09
- 08 a Lamina obovate to roundish: midvein length/width 1/1-3/2, and apex at least in part of the leaves with a mucronate tip, part of leaves emarginate. .... *B. microphylla* var. *japonica*  
 b Lamina elliptic: midvein length/width +/- 3/2, apex obtuse to rounded, without mucronate tip. .... *B. rugulosa* var. *intermedia* Hort.
- 09 a Lamina US with secondary veins often clearly visible. .... *B. microphylla* var. *riparia*  
 b Lamina US with secondary veins obscure. .... *B. microphylla* var. *microphylla*
- 10 a Lamina thin leathery, elliptic to ovate. .... *B. sempervirens*  
 b Lamina thick leathery, (narrowly) elliptic to (narrowly) obovate. .... 11
- 11 a Lamina elliptic to obovate: 15-35 × 8-20 mm. .... *B. sinica* var. *sinica*  
 b Lamina narrowly elliptic to narrowly obovate: 8-18 × 4-9 mm. .... *B. sinica* var. *insularis*

Key to genus *Sarcococca*.

- 01 a Shoot glabrous (10× LENS). ..... 02  
 b Shoot pubescent (10× LENS). ..... 08
- 02 a Lamina narrowly elliptic, length/width 3/1-5/1. .... *S. saligna*  
 b Lamina elliptic, length/width  $\leq 3/1$ . ..... 03
- 03 a Lamina midvein length predominantly 10-20 cm. .... 04  
 b Lamina midvein length predominantly  $\leq 10$  cm. .... 05
- 04 a Lamina apex gradually long acuminate to caudate. .... *S. coriacea*  
 b Lamina apex rather short acuminate to +/- abruptly acuminate. .... *S. vagans*
- 05 a Lamina width predominantly  $>3,5$  cm. .... 06  
 b Lamina width predominantly  $<3,5$  cm. .... 07
- 06 a Lamina broadly elliptic L/W  $<2/1$ , base attenuate. .... *S. brevifolia*  
 b Lamina elliptic L/W  $>2/1$ , base cuneate. .... *S. trinervia*
- 07 a Lamina apex acuminate, 1 cm. .... *S. zeylanica*  
 b Lamina apex acuminate to caudate, 1-2 cm. .... *S. wallichii*
- 08 a Lamina narrowly elliptic, length/width 3/1-5/1. .... *S. hookeriana*  
 - Lamina apex acuminate to caudate, margin at least in part of the leaves with slightly undulations.  
 ..... *S. hookeriana* var. *digyna*  
 - Lamina apex acute to (sub-)acuminate, margin predominantly flat.  
 - Suckering shrub 25-60 cm, often some shoots with leaves (sub-)opposite occur. . *S. hookeriana* var. *humilis*  
 - +/- Erect shrub 60-120 cm, leaves alternate.  
 - Lamina narrow, width 5-10 mm. .... *S. hookeriana* 'Gorepani'  
 - Lamina width  $>10$  mm. .... *S. hookeriana* var. *hookeriana*
- b Lamina ovate to lanceolate (at least in part with largest width below middle): L/W 3/1-4/1,  
OR (broadly) elliptic, L/W  $\leq 3/1$ . ..... 09
- 09 a Lamina thick leathery, midvein length predominantly 6-9 cm. .... *S. orientalis*  
 b Lamina thin leathery, midvein length predominantly  $\leq 6$  cm (vigorous shoots excepted). 10
- 10 a Current year shoot initially green but quickly changing brown. .... *S. bleddynii*  
 b Current and secondary year shoot green. .... 11
- 11 a Lamina elliptic, with largest width in the middle (fruit black). .... *S. confusa*  
 b Lamina ovate to lanceolate, with largest width below the middle (fruit red). .... 12
- 12 a Lamina ovate: length/width  $\leq 3/1$ , margin often +/- undulate. .... *S. ruscifolia*  
 b Lamina narrowly ovate to lanceolate: L/W  $>3/1$ , margin flat. ... *S. ruscifolia* 'Dragon's Gate'

### Taxa treated in this identification key.

*Buxus balearica*  
*Buxus henryi*  
*Buxus microphylla*  
- var. *japonica*  
- var. *microphylla*  
*Buxus rugulosa* var. *intermedia* Hort.  
*Buxus sempervirens*  
*Buxus sinica*  
- var. *insularis*  
- var. *sinica*  
*Buxus wallichiana*  
*Buxus taxon-A* (~*B. bodinieri*, ~ *B. harlandii*)

*Pachysandra axillaris*  
*Pachysandra procumbens*  
*Pachysandra terminalis*

*Sarcococca bleddynii*  
*Sarcococca brevifolia*  
*Sarcococca confusa*  
*Sarcococca coriacea*  
*Sarcococca hookeriana*  
- var. *digyna*  
- var. *hookeriana*  
- var. *humilis*  
*Sarcococca orientalis*  
*Sarcococca ruscifolia*  
- 'Dragon's Gate'  
*Sarcococca saligna*  
*Sarcococca trinervia*  
*Sarcococca vagans*  
*Sarcococca wallichii*  
*Sarcococca zeylanica*

### Taxa referred to synonymy in this identification key.

*Buxus colchica* = *B. sempervirens*  
*Buxus hyrcana* = *B. sempervirens*  
*Buxus microphylla* var. *koreana* = *B. sinica* var. *insularis*

*Buxus microphylla* var. *sinica* = *B. sinica*  
*Sarcococca balansae* = *S. vagans*

### Questionable/frequently misapplied names.

*Buxus taxon-A*, is a plant represented under names like *B. bodinieri* and *B. harlandii* in collections: remarkably homogenous low (+/- 1 m) and very dense vase-like shrubs with spatulate leaves. Flowers are not seen yet, also confirmed by Didier Hermans (Herplant Buxus collection), this may indicate hybrid origin. The plant differs clearly from the *B. bodinieri* type specimen with narrowly elliptic leaves and acute apex. Wild source plants in collections of both *B. bodinieri* and *B. harlandii* (from Yunnan and NE China) are really similar, and it is questionable if these (in part) belong to the presumably not hardy *B. harlandii* (type specimen collected at Tai Tam, Hongkong), or are something else. To make it even more complicated, there are plants in collections under names like *B. harlandii* and *B. harlandii* Hort., that are really different from the preceding plant: with more open habit and leaves with the lamina +/- broadly elliptic (not spatulate) and tickier in texture, probably these belong to *B. sinica*.

A plant represented in collections under the name *B. rugulosa* var. *intermedia* does not correspond well to the descriptions. It is a totally glabrous, small (<30 cm), densely branched upright shrub, with broadly elliptic blue-green leaves (lamina ≤12×6 mm). Typical *B. rugulosa* is a 1-2 m high upright shrub, with oblong leaves and pubescent young shoots. *B. rugulosa* var. *intermedia* is regarded as *B. rugulosa* var. *prostrata* in FOC, a prostrate shrub, with shoots and petiole densely pubescent fide the original description. So these plants are of questionable status and key out here as *B. rugulosa* var. *intermedia* Hort.

*B. colchica* and *B. hyrcana* are regarded as synonymous with *B. sempervirens* as no real distinguishing vegetative character is found.

Some wild collected *Sarcococca* taxa with cultivar status are also discussed in this key, as these are so distinguishable from the species where they seem to belong to (*S. hookeriana* 'Gorepani' from Nepal and *S. ruscifolia* 'Dragon Gate' from Yunnan).

