



Ghent University Botanical Garden

***Rubus* L. (Rosaceae)**

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 and leaf margin incisions.
- 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 12](#).

Taxa referred to synonymy in this key: → [page 12](#).

Remarks: → [page 12](#).

References:

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

Alice, L.A., Goldman, H., Macklin, J.A. & Moore, G. - (2015) - *Rubus* in Flora of North America 9. - [online edition](#)

Bean, W.J. & Clarke, D.L. - (1981) - *Rubus* in Bean's Trees and Shrubs hardy in the British Isles 4, p.209-240. - and [Trees and Shrubs online](#)

Krüssmann, G. - (1978) - *Rubus* in Handbuch der Laubgehölze 3, p.272-285.

Lungdi, L., & Boufford, D.A. - (2003) - *Rubus* in Flora of China 9, p.195-285. - and [online edition](#)

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[Plantentuin Universiteit Gent](#)

[Arboretum Wespelaar](#)

KEY to GROUPS

01 a Leaf predominantly compound. 02
b Leaf predominantly simple. 05

02 a Leaf pinnately compound. **GROUP A** →page 3
b Leaf 3-foliolate, OR 3-foliolate to palmately 5-foliolate, OR palmately 5-foliolate. 03

03 a Leaf 3-foliolate to palmately 5-foliolate, OR palmately 5-foliolate (palmately 5-foliolate leaves always present). **GROUP B** →page 4
b Leaf 3-foliolate (palmately 5-foliolate leaves absent). 04

04 a Leaflet LS greyish white to whitish. **GROUP C** →page 5
b Leaflet LS greenish. **GROUP D** →page 6

05 a Lamina margin predominantly entire, OR entire to serrate, OR serrate to dentate (10× LENS). **GROUP E** →page 7
b Lamina clearly lobed. 06

06 a Petiole or shoot bristly, stipitate glandular or pubescent with long hairs (10× LENS).
..... **GROUP F** →page 8
b Petiole or shoot not bristly, nor stipitate glandular, nor pubescent with long hairs. 07

07 a Shoot and/or petiole unarmed, OR with (sometimes sparse/tiny) straight slender prickles (10× LENS). **GROUP G** →page 9
b Shoot and/or petiole at least in part of the foliage armed with clearly curved prickles. .. 08

08 a Lamina terminal lobe apex predominantly acuminate to caudate. **GROUP H** →page 10
b Lamina terminal lobe apex predominantly obtuse to acute. **GROUP I** →page 11

GROUP A
Leaf pinnately compound.

01 a	Leaf 3-5(-7)-foliolate <u>BUT never</u> >7-foliolate.	02
b	Leaf 7-more-foliolate at least in part of the foliage.	08
02 a	Leaflet LS +/- green, sparsely pubescent to glabrous (10× LENS).	03
b	Leaflet LS greyish to whitish pubescent.	04
03 a	Subshrub with creeping stems. Petiole and rachis strongly armed with 10-20 curved prickles.	<i>R. illecebrosus</i>
b	Erect shrub. Petiole and rachis +/- armed with <10 curved prickles.	<i>R. fraxinifolius</i>
04 a	Shoot and/or petiole without or with +/- weak straight prickles.	<i>R. idaeus</i>
b	Shoot and/or petiole at least in part with +/- strong curved prickles.	05
05 a	Petiole predominantly longer than rachis.	<i>R. biflorus</i>
b	Petiole predominantly shorter than rachis.	06
06 a	Leaf 5-7-foliolate.	<i>R. flosculosus</i>
b	Leaf 3-5-foliolate.	07
07 a	Shoot, petiole and rachis glabrous or glabrescent (10× LENS).	<i>R. lasiostylus</i>
b	Shoot, petiole and rachis pubescent.	<i>R. incanus</i>
08 a	Shoot +/- densely glandular with stipitate glands (10× LENS).	09
b	Shoot eglandular.	10
09 a	Leaflet LS glandular dotted, margin serrate dentate (10× LENS).	<i>R. parvifraxinifolia</i>
b	Leaflet LS eglandular, margin lacerate.	<i>R. PBarney</i> (Vietnam)
10 a	Low subshrub, largest lateral leaflets <2 cm.	<i>R. taiwanicola</i>
b	Shrub, largest lateral leaflets >2 cm.	11
11 a	Mature leaf predominantly ≤20 cm.	12
b	Mature leaf >20 cm.	14
12 a	Terminal leaflet L/W ratio >2/1, LS glabrescent (10× LENS).	<i>R. croceacanthus</i>
b	Terminal leaflet L/W ratio <2/1, LS greyish-whitish pubescent.	13
13 a	Leaflet margin predominantly coarsely serrate (10× LENS).	<i>R. niveus</i>
b	Leaflet margin doubly incised serrate.	<i>R. amabilis</i>
14 a	Shoot stout, thick and angled.	<i>R. rosifolius</i> 'Coronarius'
b	Shoot supple, slender and +/- terete.	15

- 15 a Basal leaflets clearly the largest, AND successive pairs gradually decreasing in size towards leaf apex. **R. tibetanus**
- b Basal leaflets not or not always the largest, AND/OR successive pairs not or irregularly decreasing in size towards leaf apex. 16
- 16 a Shoot and rachis predominantly greenish (wipe off bloom to check). **R. cockburneanus**
- b Shoot and rachis often reddish purple. **R. coreanus**

GROUP B

Leaf 3-foliolate to palmately 5-foliolate, OR palmately 5-foliolate
(palmately 5-foliolate leaves always present).

- 01 a Leaflet oblong, L/W ratio >3/1. 02
- b Leaflet ovate or elliptic, L/W ratio predominantly <2/1. 04
- 02 a Leaflet LS with 30-50 secondary veins/side (10× LENS). **R. lineatus**
- b Leaflet LS with <12 secondary veins/side. 03
- 03 a Terminal leaflet L/W ratio 3/1-4/1. **R. playfairianus**
- b Terminal leaflet L/W ratio clearly >5/1. **R. schmidelioides** var. **pauperatus**
- 04 a Leaflet deeply pinnately lobed. **R. laciniatus**
- b Leaflet dentate to irregularly lobed. 05
- 05 a Shoot apruinose. **R. fruticosus** agg.
- b Shoot predominantly pruinose. 06
- 06 a Shoot +/- pubescent with stellate hairs (10× LENS). **R. ulmifolius**
- b Shoot glabrous, OR IF pubescent then with single or glandular hairs. 07
- 07 a Lateral leaflets predominantly sessile. **R. fruticosus** agg.
- b Lateral leaflets predominantly petiolulate. 08
- 08 a Shrub with creeping shoots. Leaflets 3(-5). **R. ursinus**
- b Ascending shrub with erect, then arching shoots. Leaflets (3-)5(-7). **R. leucodermis**

GROUP C

**Leaf 3-foliolate (palmately 5-foliolate leaves absent).
Leaflet LS greyish white to whitish.**

- 01 a Shoot and petiole without glandular hairs (10× LENS). 02
 b Shoot and petiole with glandular hairs. 03
- 02 a Shoot glabrous and pruinose (10× LENS). *R. occidentalis*
 b Shoot densely pubescent, apruinose. *R. mesogaeus*
- 03 a Terminal leaflet LS with 15-30(-more) secondary veins/side. *R. splendidissimus*
 b Terminal leaflet LS with <15 secondary veins/side. 04
- 04 a Terminal leaflet sessile. 05
 b Terminal leaflet petiolulate. 06
- 05 a Leaflet narrowly elliptic to oblong. *R. bambusarum*
 b Leaflet ovate to elliptic. *R. pentagonus*
- 06 a Leaflet LS whitish AND shoot and petiole purplish-red. *R. phoenicolasius*
 b Leaflet LS greyish-white, shoot and petiole greenish. *R. sachalinensis*

GROUP D

**Leaf 3-foliolate (palmately 5-foliolate leaves absent).
Leaflet LS green.**

- 01 a Terminal leaflet with ≥ 10 secondary veins/side. 02
 b Terminal leaflet with 3-9 secondary veins/side. 03
- 02 a Leaflet margin shallowly serrate (10 \times LENS). *R. paucidentatus*
 b Leaflet margin coarsely double serrate to lobed. *R. spectabilis*
- 03 a Shoot and petiole unarmed (10 \times LENS). 04
 b Shoot armed with sparse small weak to (moderately) strong (often curved) prickles. 06
- 04 a Shoot and petiole glabrous or almost so (10 \times LENS). *R. arcticus*
 b Shoot and petiole pubescent or bristly stipitate glandular. 05
- 05 a Leaflet predominantly lobed. *R. nepalensis*
 b Leaflet predominantly unlobed. *R. fockeanus*
- 06 a Terminal leaflet strongly reduced. Petiolule 2-3 \times leaflet length. *R. squarrosus*
 b Terminal leaflets not reduced. Petiolule \leq leaflet length. 07
- 07 a Leaflet apex obtuse. *R. parvifolius*
 b Leaflet apex acute to acuminate. 08
- 08 a Shoot at least initially pruinose. *R. caesius*
 b Shoot not pruinose. 09
- 09 a Shoot and petiole long stipitate glandular (10 \times LENS). *R. trivialis*
 b Shoot and petiole different. 10
- 10 a Leaflet LS without prickles (10 \times LENS). *R. saxatilis*
 b Leaflet LS with hooked prickles. 11
- 11 a Lateral leaflet sessile. *R. xanthocarpus*
 b Lateral leaflet clearly petiolulate. *R. cissioides*

GROUP E

Leaves simple AND lamina margin predominantly entire, OR entire to serrate,
OR serrate to dentate (10× LENS).

- 01 a Lamina base predominantly rounded to broadly cuneate. 02
 b Lamina base predominantly truncate to cordate. 06
- 02 a Secondary veins >20/side. Lamina LS +/- silvery silky pubescent. *R. calophyllus*
 b Secondary veins <14/side. Lamina LS green and (almost) glabrous, or greyish to rusty pubescent, or +/- slightly pubescent on venation. 03
- 03 a Lamina LS green to greyish, often glabrous or glabrescent (10× LENS). 04
 b Lamina LS greyish to rusty pubescent over the whole surface. 05
- 04 a Shoot, petiole and lamina LS venation +/- arachnoid pubescent (10 × LENS). *R. swinhoei*
 b Shoot, petiole and lamina LS venation glabrous or sparsely pubescent with single hairs.
 *R. acuminatus*
- 05 a Lamina lanceolate, width predominantly <3 cm. *R. liui*
 b Lamina ovate to lanceolate, width often 3-5 cm. *R. caudifolius*
- 06 a Shoot and petiole remarkable bristly or stipitate glandular pubescent (10× LENS). 07
 b Shoot and petiole pubescent to glabrous, bristles or glandular hairs sparse or absent. 08
- 07 a Shoot and petiole glandular pubescent. Lamina lanceolate to oblong lanceolate.
 *R. angustibracteatus*
 b Shoot and petiole bristly. Lamina broadly ovate to broadly elliptic. *R. gongshanensis*
- 08 a Lamina predominantly lanceolate to oblong lanceolate, L/W ratio 2/1-3/1(-4/1). 09
 b Lamina ovate to broadly ovate, L/W ratio predominantly ≤2/1. 10
- 09 a Lamina base truncate to (shallowly) cordate. *R. kawakamii*
 b Lamina base deeply cordate. *R. ichangensis*
- 10 a Lamina LS midvein without prickles (10× LENS). *R. xanthoneurus*
 b Lamina LS midvein with curved prickles. 11
- 11 a Shoot and petiole at least in part pubescent with perpendicular hairs (10× LENS).
 *R. paniculatus*
 b Shoot and petiole at least in part pubescent with adpressed hairs. *R. assamensis*

GROUP F
Leaves predominantly simple AND lamina lobed.
Petiole or shoot bristly, stipitate glandular, or pubescent with long hairs (10× LENS).

- 01 a Lamina apex predominantly obtuse to subacute. 02
 b Lamina apex predominantly acute to acuminate. 05
- 02 a Lamina discolourous: LS (pale) tawny to yellowish coloured. 03
 b Lamina concolorous, surfaces greenish. 04
- 03 a Lamina midvein length <7 cm. *R. pentalobus*
 b Lamina midvein length 7-15(-more) cm. *R. sieboldii*
- 04 a Shoot and petiole +/- bristly and pubescent with long hairs (10× LENS). *R. pectinellus*
 b Shoot and petiole densely stipitate glandular, bristles/prickles absent. *R. pectinarioides*
- 05 a Shoot and petiole unarmed: bristles or prickles absent (10× LENS). 06
 b Shoot and petiole armed with bristles or (small) hooked prickles. 08
- 06 a Lamina rather triangular, predominantly 3- to shallowly 5-lobed. *R. trilobus*
 b Lamina rather orbicular, predominantly 5-lobed. 07
- 07 a Lamina (3-)5(-7)-lobed. Shoot and petiole yellowish- and reddish stipitate glandular (10× LENS). *R. parviflorus*
 b Lamina(3-)5-lobed. Shoot and petiole purplish stipitate glandular. *R. odoratus*
- 08 a Lamina US venation arachnoid pubescent with long hairs (10× LENS). ... *R. arachnoideus*
 b Lamina US venation pubescence different. 09
- 09 a Shoot and petiole with bristles or slender hooked prickles (10× LENS). 10
 b Shoot and petiole with short hooked prickles. 11
- 10 a Larger leaves predominantly 5-lobed. Petiole and shoot armed with slender hooked prickles. *R. rufus*
 b Larger leaves unlobed to shallowly 3-lobed. Petiole and shoot bristly. *R. tricolor*
- 11 a Lamina base truncate to widely cordate. *R. parkeri*
 b Lamina base deeply and narrowly cordate. 12
- 12 a Young foliage green. *R. treutleri*
 b Young foliage purplish tinted. *R. tephrodes*
 - Shoot densely stipitate glandular. *R. tephrodes* var. *setosissimus*
 - Shoot moderately stipitate glandular. *R. tephrodes* var. *tephrodes*

GROUP G
 Leaves predominantly simple AND lamina lobed.
 Shoot and/or petiole unarmed, OR with (sometimes sparse/tiny) straight slender prickles
 (10× LENS).

- 01 a Terminal lobe at least in part of the foliage clearly much longer than wide. 02
 b Terminal lobe not or slightly longer than wide. 04
- 02 a Lamina 5(-7)-lobed, LS glabrous or subglabrous (10× LENS). *R. chingii* var. *suavissimus*
 b Lamina 3(-5)-lobed, LS densely pubescent. 03
- 03 a Lamina margin +/- weakly serrate, teeth ending in soft apices (10× LENS). *R. flagelliflorus*
 b Lamina margin serrate, teeth ending in hard sharp apices. *R. henryi*
 - Lamina terminal lobe $\geq 2/3$ th midvein length, base +/- rounded. *R. henryi* var. *henryi*
 - Lamina terminal lobe $\leq 2/3$ th midvein length, base rounded to cordate. *R. henryi* var. *sozostylus*
- 04 a Shoot $\varnothing < 4$ mm. 05
 b Shoot $\varnothing 4-8$ mm. 06
- 05 a Lamina LS glabrous to slightly pubescent on larger veins (10× LENS). *R. deliciosus*
 b Lamina LS pubescent with long hairs on venation. *R. neomexicanus*
- 06 a Lamina shallowly 3(-5)-lobed. *R. crassifolius*
 b Lamina deeply 3-5-lobed. 07
- 07 a Shoot and petiole with numerous straight slender prickles (10× LENS). *R. yiwuanus*
 b Straight lender prickles absent. 08
- 08 a Lamina terminal lobe predominantly longer than wide. 09
 b Lamina terminal lobe often wider than long. 10
- 09 a Lamina LS strongly reticulate, tertiary and quaternary veinlets elevated and quite visible
 (10× LENS). *R. formosensis*
 b Lamina LS not or slightly reticulate, tertiary veinlets not or slightly elevated in part,
 quaternary veinlets slightly visible. *R. trifidus*
- 10 a Lamina lateral lobes predominantly obtuse. *R. setchuenensis*
 b Lamina lateral lobes predominantly acute. *R. aff. setchuenensis*

GROUP H
Leaves predominantly simple AND lamina lobed.
Shoot and/or petiole at least in part of the foliage armed with clearly curved prickles
(10× LENS).
Lamina terminal lobe apex predominantly acuminate to caudate.

- 01 a Terminal lobe elongated and clearly much longer than wide, at least in part of the foliage. 02
- b Terminal lobe not or rarely elongated and then slightly longer than wide. 06
- 02 a Shoot and petiole +/- arachnoid pubescent (10× LENS). 03
- b Shoot and petiole (almost) glabrous. 04
- 03 a Lamina margin +/- weakly serrate, teeth ending in soft apices (10× LENS). *R. flagelliflorus*
- b Lamina margin serrate, teeth ending in sharp hard apices. *R. henryi*
- Lamina terminal lobe $\geq 2/3$ th midvein length, base +/- rounded. *R. henryi* var. *henryi*
- Lamina terminal lobe $\leq 2/3$ th midvein length, base rounded to cordate. *R. henryi* var. *sozostylus*
- 04 a Shoot remarkably pruinose. Lamina LS bluish green. *R. trianthus*
- b Shoot green or brownish, apruinose. Lamina LS green. 05
- 05 a Lamina LS venation glabrous (10× LENS). *R. palmatus*
- b Lamina LS venation minutely but clearly pubescent. *R. corchorifolius*
- 06 a Lamina terminal lobe rhomboid to trullate. *R. crataegifolius*
- b Lamina terminal lobe deltoid to broadly ovate. 07
- 07 a Lamina base peltate. *R. peltatus*
- b Lamina base cordate. 08
- 08 a Lamina terminal lobe apex acute. *R. microphyllus*
- b Lamina terminal lobe apex acuminate to caudate. 09
- 09 a Lamina US and LS clearly reticulate, tertiary and quaternary veinlets elevated (10× LENS). *R. yiwuanus*
- b Lamina US and LS not or slightly reticulate, tertiary veinlets not or slightly elevated in part, quaternary veinlets slightly visible. *R. lambertianus*

GROUP I
Leaves predominantly simple AND lamina lobed.
Shoot and/or petiole at least in part of the foliage armed with clearly curved prickles
(10× LENS).
Lamina terminal lobe apex predominantly obtuse to acute.

- 01 a Lamina small, midvein length predominantly 3-6 cm. 02
 b Lamina large, midvein length predominantly 6-10(-20) cm. 04
- 02 a Lamina concolorous, surfaces greenish. Shoot and petiole with long slender straight prickles mixed with slender hooked prickles (10× LENS). *R. pectinellus*
 b Lamina discolorous: LS greyish to (pale) towney coloured. Shoot and petiole with tiny short hooked prickles. 03
- 03 a Lamina apex subacute to acute. *R. rolfei*
 b Lamina apex obtuse. *R. pentalobus*
- 04 a Lamina predominantly (often weakly) 3-lobed. 05
 b Lamina predominantly clearly 5-lobed. 07
- 05 a Mature lamina LS quaternary veinlets not or only partly elevated or vaguely visible (10× LENS). *R. hakonensis*
 b Mature lamina LS quaternary veinlets and! also smaller areoles all elevated/visible. 06
- 06 a Lamina midvein length predominantly < lamina width. *R. irenaeus*
 b Lamina midvein length predominantly > lamina width. *R. maoershanensis*
- 07 a Lamina terminal lobe widest at base. *R. buergeri*
 b Lamina terminal lobe widest near the middle. 08
- 08 a Mature lamina LS quaternary veinlets not or only partly elevated and slightly visible (10× LENS). *R. nagasawanus*
 b Mature lamina LS quaternary veinlets and! also smaller areoles all elevated and quite visible. 09
- 09 a Stipules pinnatisect with extremely narrow linear lobes. *R. alceifolius*
 b Stipules pinnatifid with ovate-lanceolate lobes. 10
- 10 a Lamina midvein length predominantly < lamina width. *R. maliformis*
 b Lamina midvein length predominantly > lamina width. *R. reflexus*

Taxa treated in this identification key.

<i>R. acuminatus</i>	<i>R. idaeus</i>	<i>R. phoenicolasius</i>
<i>R. alceifolius</i>	<i>R. illecebrosus</i>	<i>R. playfairianus</i>
<i>R. amabilis</i>	<i>R. incanus</i>	<i>R. reflexus</i>
<i>R. angustibracteatus</i>	<i>R. irenaeus</i>	<i>R. rolfei</i>
<i>R. arachnoideus</i>	<i>R. kawakamii</i>	<i>R. rosifolius</i> 'Coronarius'
<i>R. arcticus</i>	<i>R. laciniatus</i>	<i>R. rufus</i>
<i>R. assamensis</i>	<i>R. lambertianus</i>	<i>R. sachalinensis</i>
<i>R. bambusarum</i>	<i>R. lasiostylus</i>	<i>R. saxatilis</i>
<i>R. biflorus</i>	<i>R. leucodermis</i>	<i>R. schmidelioides</i> var. <i>pauperatus</i>
<i>R. buergeri</i>	<i>R. lineatus</i>	<i>R. aff. setchuensis</i>
<i>R. caesius</i>	<i>R. liui</i>	<i>R. setchuensis</i>
<i>R. calophyllus</i>	<i>R. maliformis</i>	<i>R. sieboldii</i>
<i>R. caudifolius</i>	<i>R. maoershanensis</i>	<i>R. spectabilis</i>
<i>R. chingii</i> var. <i>suavissimus</i>	<i>R. mesogaeus</i>	<i>R. splendidissimus</i>
<i>R. cissioides</i>	<i>R. microphyllus</i>	<i>R. squarrosus</i>
<i>R. cockburneanus</i>	<i>R. nagasawanus</i>	<i>R. swinhoei</i>
<i>R. corchorifolius</i>	<i>R. neomexicanus</i>	<i>R. taiwanicola</i>
<i>R. coreanus</i>	<i>R. nepalensis</i>	<i>R. tephrodes</i>
<i>R. crassifolius</i>	<i>R. niveus</i>	- var. <i>setosissimus</i>
<i>R. crataegifolius</i>	<i>R. occidentalis</i>	- var. <i>tephrodes</i>
<i>R. croceacanthus</i>	<i>R. odoratus</i>	<i>R. thibetanus</i>
<i>R. deliciosus</i>	<i>R. palmatus</i>	<i>R. treutleri</i>
<i>R. flagelliflorus</i>	<i>R. paniculatus</i>	<i>R. trianthus</i>
<i>R. flosculosus</i>	<i>R. parkeri</i>	<i>R. tricolor</i>
<i>R. fockeanus</i>	<i>R. parviflorus</i>	<i>R. trifidus</i>
<i>R. formosensis</i>	<i>R. parvifolius</i>	<i>R. trilobus</i>
<i>R. fraxinifolius</i>	<i>R. parvifraxinifolia</i>	<i>R. trivialis</i>
<i>R. fruticosus</i> agg.	<i>R. paucidentatus</i>	<i>R. ulmifolius</i>
<i>R. gongshanensis</i>	<i>R. PBarney</i> (Vietnam)	<i>R. ursinus</i>
<i>R. hakonensis</i>	<i>R. pectinarioides</i>	<i>R. xanthocarpus</i>
<i>R. henryi</i>	<i>R. pectinellus</i>	<i>R. xanthoneurus</i>
- var. <i>henryi</i>	<i>R. peltatus</i>	<i>R. yiwuanus</i>
- var. <i>sozostylus</i>	<i>R. pentagonus</i>	
<i>R. ichangensis</i>	<i>R. pentalobus</i>	

Taxa referred to synonymy in this identification key.

R. calycinoides = *R. rolfei*
R. hayata-koidzumii = *R. pentalobus*
R. henryi var. *bambusarum* = *R. bambusarum*
R. giraldianus = *R. cockburneanus*
R. longisepalus = *R. crataegifolius*

Remarks.

Rubus is a large genus. This key discusses almost 100 species that are in cultivation (but excludes a full treatment of microspecies within the ***R. fruticosus* agg.**).

Several dozen more species represented in collections are too small, at the moment, to include.

