



# *Picea* (Pinaceae)

## *Studiedag BDB*

7 September 2014

Plantentuin Meise

©Jan De Langhe

# *Picea* (Pinaceae)

*vegetative key*  
*to species*  
*in cultivation*

*Morphologically rather similar species.*

**With 34 species in this key:**

*P. abies*

*P. alcoquiana*

*P. asperata*

*P. brachytyla*

*P. breweriana*

*P. chihuahuana*

*P. crassifolia*

*P. engelmannii*

*P. farreri*

*P. glauca*

*P. glehnii*

*P. jezoensis*

*P. koraiensis*

*P. koyamae*

*P. likiangensis*

*P. linzhiensis*

*P. mariana*

*P. martinezii*

*P. maximowiczii*

*P. meyeri*

*P. morrisonicola*

*P. obovata*

*P. omorika*

*P. orientalis*

*P. pungens*

*P. purpurea*

*P. retroflexa*

*P. rubens*

*P. schrenkiana*

*P. sitchensis*

*P. smithiana*

*P. spinulosa*

*P. torano*

*P. wilsonii*

*To improve accuracy:*



*Use a 10× LENS.*

*Look at the entire plant.*

*Beware of hybridisation.*



*Picea likiangensis* var. *rubescens*



1 cm



*Picea likiangensis* var. *rubescens*

10× LENS: stomata

1 cm



1 cm



*Picea likiangensis* var. *rubescens*

10× LENS: stomata



1 cm

1 cm







*Picea jezoensis*

**10× LENS: glabrous shoot**

1 cm



1 cm





*Picea glehnii*





**10× LENS: pubescent shoot**







1 cm



*Picea asperata*

**10× LENS: resinous bud**

1 cm



1 cm





*Picea glauca*



1 cm



*Picea glauca*

**10× LENS: bud without resin**



1 cm

1 cm



Look at the entire plant.

*Picea alcoquiana*



1 cm



*Picea mariana*

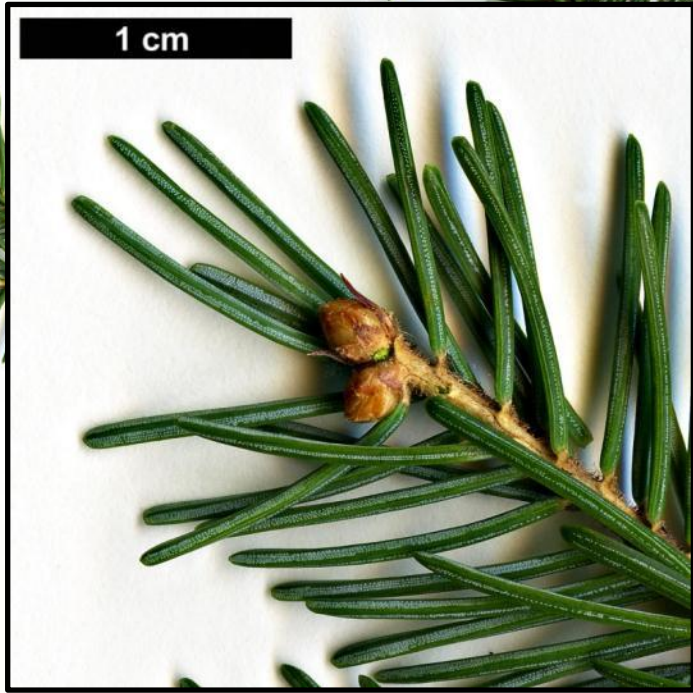


1cm



**Beware of hybridisation.**

*Picea mariana*



1 cm



*Picea omorika*





*Picea omorika*



1 cm

1 cm



*Picea ×mariorika*





*Picea ×mariorika*

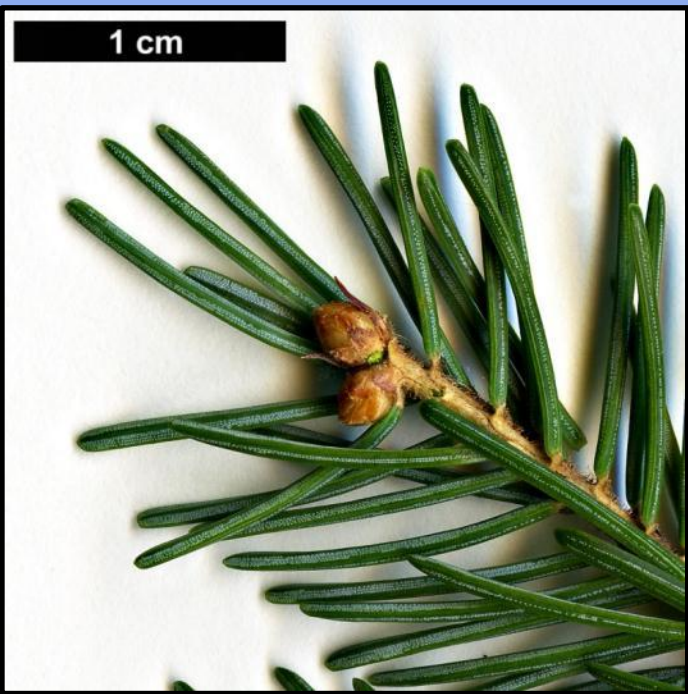


1 cm

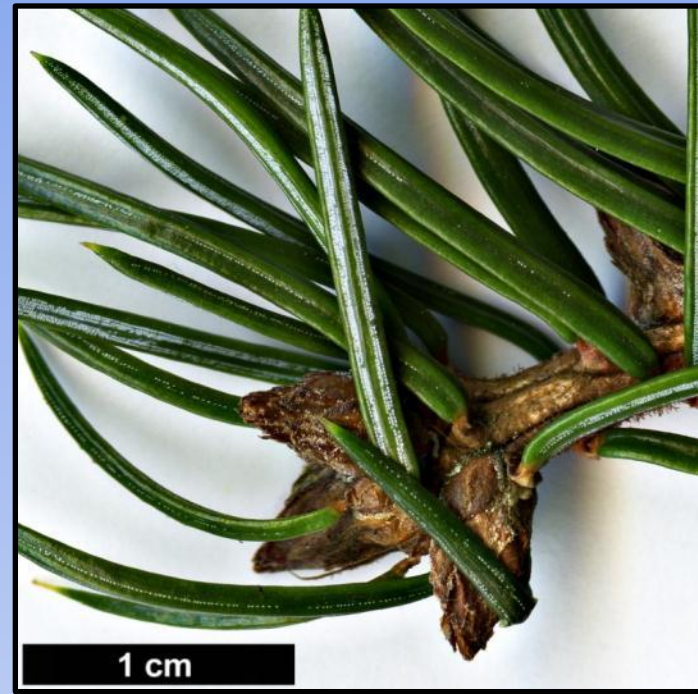


*Picea mariana*

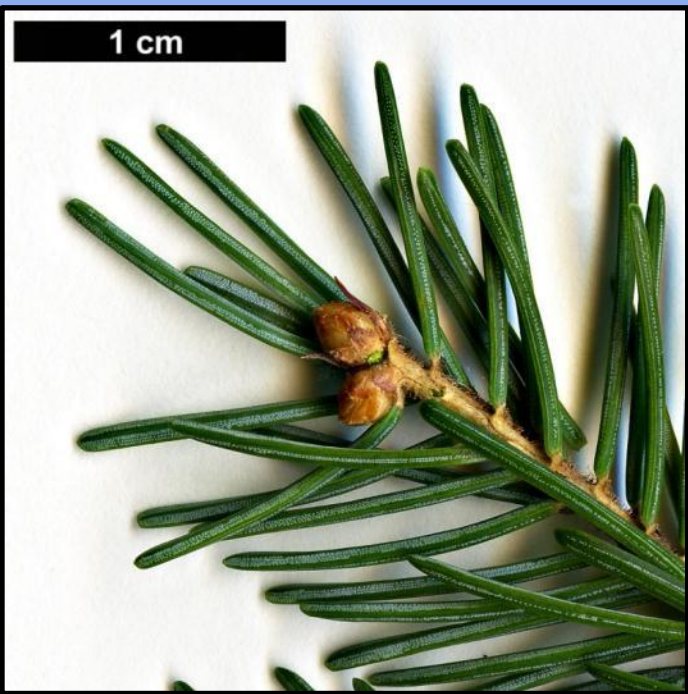




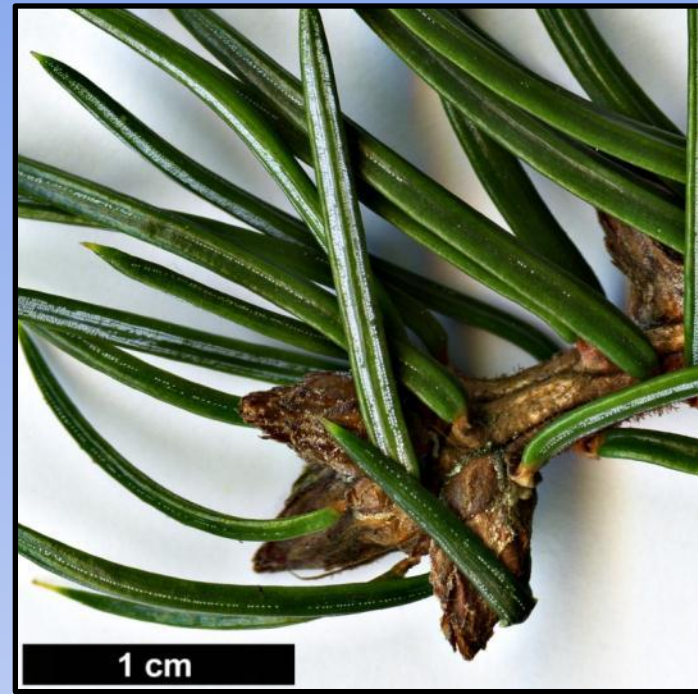
*Picea mariana*



*Picea omorika*



*Picea mariana*



*Picea omorika*



*Picea xmariorika*





*Picea mariana*



*Picea mariana*



*Picea omorika*



×

*Picea mariana*



*Picea omorika*

=

*Picea ×mariorika*



***VEGETATIVE  
KEY***

(simplified)

**GROUP A: NEEDLE DISCOLOUROUS, outer surface without stomata lines (LENS).**

▶ ALL lateral shoots pendulous. Needles often 25-35 mm. → *P. breweriana* → *P. spinulosa*

▶ Lateral shoots spreading to pendulous in part, OR needles predominantly ≤25 mm.

▶ Leafy lateral shoot predominantly long and slender: L/W ≥4/1. → *P. brachytyla* → *P. farreri*

▶ Leafy lateral shoot predominantly short and wide: L/W ≤4/1.

▶ Shoot pubescent.



Needles 7-14 mm, +/- imbricate.  
→ *P. purpurea*



Needles 10-22 mm, +/- raised.  
→ *P. omorika*

▶ Shoot glabrous.



Needle Ø flattened, apex obtuse/acute.  
→ *P. jezoensis*



Needle Ø rhombic-quadrangular, apex acute/acuminate: pungent. → *P. sitchensis*

**GROUP A: NEEDLE DISCOLOUROUS, outer surface with 1-4 stomata lines (LENS).**

▶ Needle long, predominantly (15-)20-35 mm.

▶ Shoot pendulous. Needles all pointing forward. → *P. spinulosa*

▶ Shoot spreading/pendulous. Needles forward + sideward.

▶ Shoot glabrous, needle pungent. → *P. sitchensis*

▶ Shoot pubescent, needle not pungent.



Needle Ø flattened, few stomata. → *P. omorika*



Needle Ø rhombic/quadrangular, many stomata. → *P. likiangensis*

▶ Needle short, predominantly 8-15 mm.

▶ Needles above shoot imbricate. → *P. purpurea*

▶ Needles above shoot raised.

▶ End bud not resinous, basal scales acicular.



Needle slender, Ø ≤0,8 mm. → *P. mariana*



Needle thicker, Ø 1-1,5 mm. → *P. glehnii*

▶ End bud resinous (basal scales triangular).



Pulvini small: 0,5 mm. → *P. alcoquiana*



Pulvini larger: 1-1,5 mm. → *P. likiangensis*

**GROUP B: NEEDLE CONCOLOUROUS, SHORT: predominantly ≤15(-17) mm.**

▶ Needle short, length rather constant. → *P. orientalis*

▶ Needle length more variable.

▶ Current year shoot GLABROUS.

▶ Needles above shoot +/- appressed to slightly steeply directed forward. → *P. morrisonicola*

▶ Needles above shoot at least in part +/- strongly raised and directed forward to (strongly) assurgent on strong shoots.

↓

↓

Needles above shoot at least in part +/- strongly raised.  
Bud not resinous. → *P. mariana*

Needles above shoot at least in part (strongly) assurgent.  
Bud resinous. → *P. koyamae*

▶ Current year shoot PUBESCENT.

▶ Bud resinous, OR bud scales triangular. → *P. maximowiczii*

▶ Bud not resinous, basal scales acicular. → *P. rubens*

**GROUP B: NEEDLE CONCOLOUROUS, LONG: predominantly 15-25(-more) mm.**

▶ Shoot +/- pendulous. All needles directed forward AND 25-50 × 1 mm. → *P. smithiana*

▶ Shoot spreading, OR needles partly directed sideward, OR needle ≤35 × 1-1,5(-2) mm.

▶ Current year and second year shoot CONSPICUOUSLY PALE, sometimes almost ivory.

▶ Shoot slender, Ø +/- 2 mm. Needles below shoot directed sideward to forward, not pungent. → *P. wilsonii*

▶ Shoot stout Ø 2-4 mm. Needles below shoot directed rather forward, often pungent. → *P. schrenkiana*

▶ Shoot YELLOW TO BROWN or at least so the second year.

▶ Needles not pungent. → *P. abies* → *P. engelmannii*

▶ Needles pungent.

▶ Needle Ø +/- flattened AND extremely sharp painfully pungent. → *P. chihuahuana* → *P. martinezii*

▶ Needle Ø rhombic to quadrangular (roll between fingers).

↓

↓

↓

Bud apex obtuse. Needles very painfully pungent. → *P. torano*

Bud apex acute. Bud resinous. → *P. asperata*

Bud apex acute. Bud not resinous. → *P. pungens*

*key to groups*



*2 groups*

*each with following*

*diagnostic characters*



**GROUP A: NEEDLE DISCOLOUROUS**  
(surfaces clearly different in colour to the naked eye)

*Picea brachytyla*





**GROUP B: NEEDLE CONCOLOUROUS**  
(surfaces clearly similar in colour to the naked eye)

*Picea wilsonii*





**GROUP A: NEEDLE DISCOLOUROUS**  
(surfaces clearly different in colour to the naked eye)

*Picea brachytyla*



**GROUP A: NEEDLE DISCOLOUROUS**  
(surfaces clearly different in colour to the naked eye)

*Picea brachytyla*

Needle outer surface  
**without** stomata lines (LENS).





*Needle discolorous, outer surface without stomata lines.*

*ALL lateral shoots pendulous.  
Needles often 25-35 mm.*



*Needle discolorous, outer surface without stomata lines.*

*ALL lateral shoots pendulous.  
Needles often 25-35 mm.*



*Lateral shoots spreading to  
pendulous in part,  
OR  
needles predominantly  $\leq 25$  mm.*



***Needle discolorous, outer surface without stomata lines.***

***ALL lateral shoots pendulous.  
Needles often 25-35 mm.***



*Lateral shoots spreading to  
pendulous in part,  
OR  
needles predominantly  $\leq 25$  mm.*





***Needle discolorous, outer surface without stomata lines.***

***ALL lateral shoots pendulous. Needles often 25-35 mm.***

*Picea breweriana*



***Needle discolorous, outer surface without stomata lines.***

***ALL lateral shoots pendulous. Needles often 25-35 mm.***

*Picea breweriana*



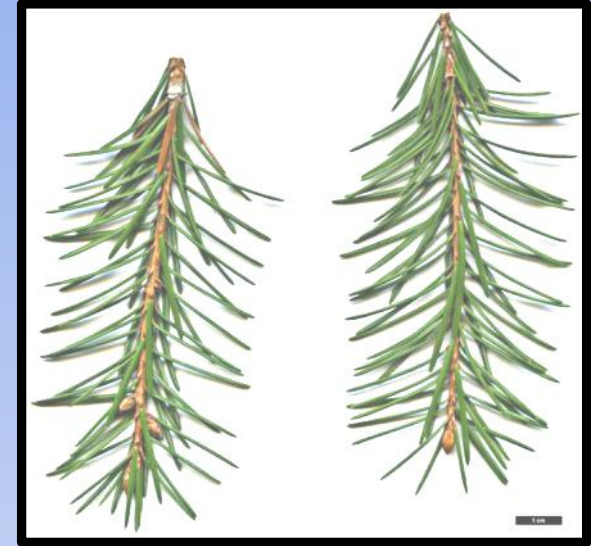
*Picea spinulosa*





***Needle discolorous, outer surface without stomata lines.***

*ALL lateral shoots pendulous.  
Needles often 25-35 mm.*



*Lateral shoots spreading to  
pendulous in part,  
OR  
needles predominantly  $\leq 25$  mm.*





***Needle discolorous, outer surface without stomata lines.***

***LAT shoots spreading/pendulous in part, OR needles  $\leq 25$  mm.***

Leafy lateral shoot  
predominantly  
long and slender:  
 $L/W \geq 4/1$ .



***Needle discolorous, outer surface without stomata lines.***

***LAT shoots spreading/pendulous in part, OR needles  $\leq 25$  mm.***

Leafy lateral shoot  
predominantly  
long and slender:  
 $L/W \geq 4/1$ .



Leafy lateral shoot  
predominantly  
short and wide:  
 $L/W \leq 4/1$ .





***Needle discolorous, outer surface without stomata lines.***

***LAT shoots spreading/pendulous in part, OR needles  $\leq 25$  mm.***

Leafy lateral shoot  
predominantly  
long and slender:  
 $L/W \geq 4/1$ .



Leafy lateral shoot  
predominantly  
short and wide:  
 $L/W \leq 4/1$ .



*Picea brachytyla*





*Picea farreri*



1 cm

***Needle discolorous, outer surface without stomata lines.***

***LAT shoots spreading/pendulous in part, OR needles  $\leq 25$  mm.***

Leafy lateral shoot  
predominantly  
long and slender:  
 $L/W \geq 4/1$ .



Leafy lateral shoot  
predominantly  
short and wide:  
 $L/W \leq 4/1$ .





*Picea purpurea*



1 cm

*Picea purpurea*

Shoot pubescent.





*Picea purpurea*

Shoot pubescent.

Needles 7-14 mm, +/- imbricate.



*Picea omorika*



1 cm



Shoot pubescent.

*Picea omorika*

Needles 10-22 mm, +/- raised.





*Picea jezoensis*



1 cm



Shoot glabrous.

*Picea jezoensis*

Needle flattened,  
apex obtuse/acute.



1 cm

1 cm



*Picea sitchensis*

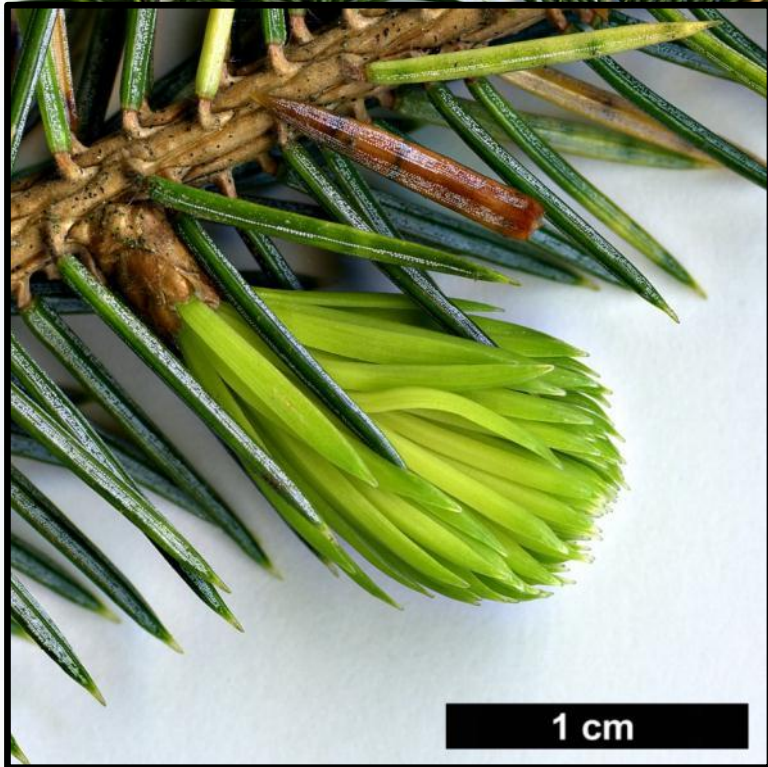




**Shoot glabrous.**

*Picea sitchensis*

**Needle rhombic-quadriangular,  
apex acute/acuminate:  
pungent.**





***GROUP A: NEEDLE DISCOLOUROUS***  
(surfaces clearly different in colour to the naked eye)

*Picea likiangensis*

Needle outer surface  
with 1-4 stomata lines (LENS).





***Needle discolorous, outer surface with 1-4 stomata lines.***

**Needle long,  
predominantly (15-)20-35 mm.**

**Needle short,  
predominantly 8-15 mm.**

*Needle discolorous*, outer surface with 1-4 stomata lines.

Needle long,  
predominantly (15-)20-35 mm.

Needle short,  
predominantly 8-15 mm.



*Picea spinulosa*



Shoot pendulous.  
Needles all pointing forward.

*Picea spinulosa*





*Picea sitchensis*





*Picea sitchensis*

Shoot spreading/pendulous.  
Needles forward + sideward.

Shoot glabrous,  
needle pungent.

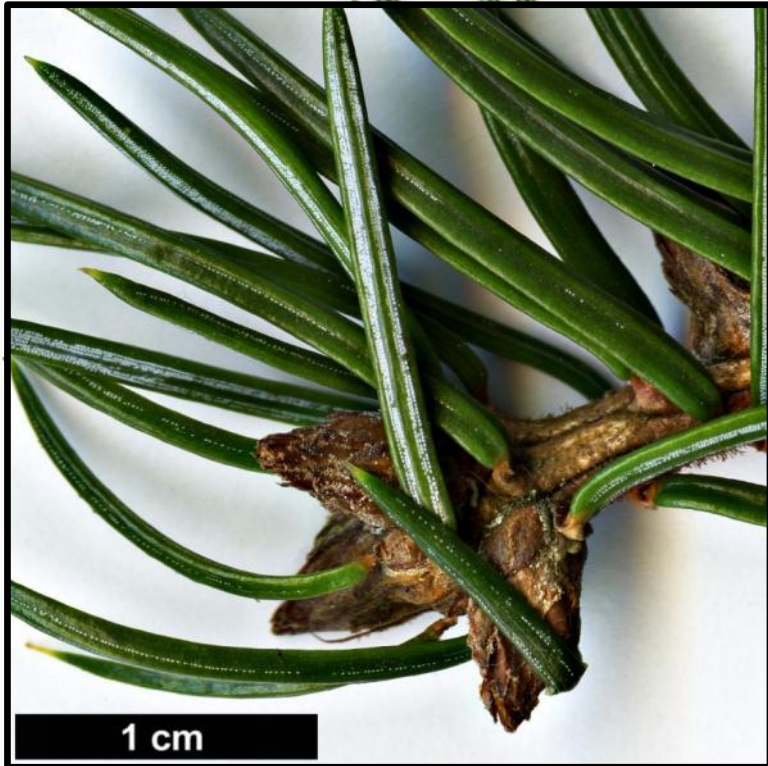


*Picea omorika*





*Picea omorika*



Shoot spreading/pendulous.  
Needles forward + sideward.

Shoot pubescent,  
needle not pungent.

Needle flattened,  
some with few stomata.



1 cm



*Picea likiangensis*



1 cm



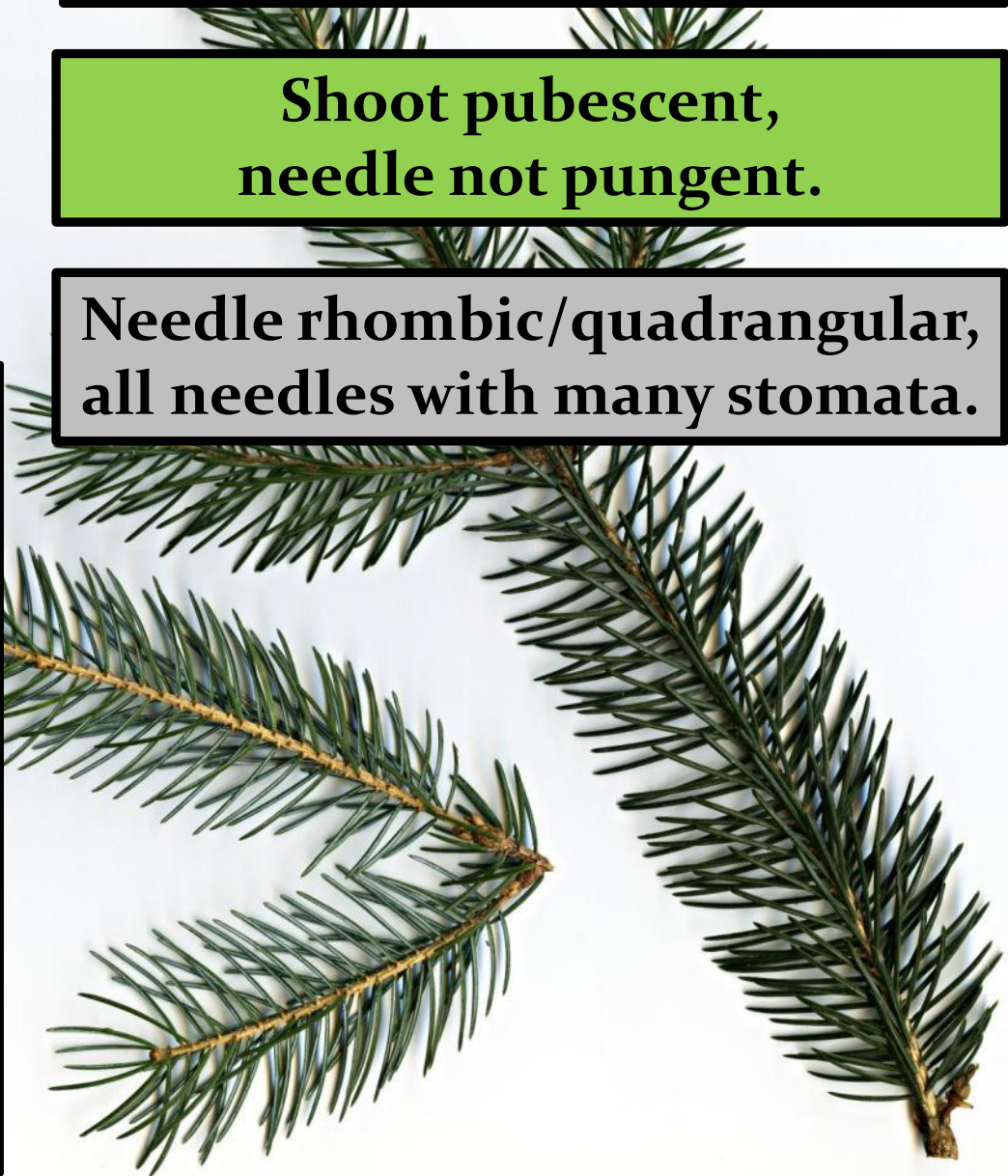
*Picea likiangensis*



Shoot spreading/pendulous.  
Needles forward + sideward.

Shoot pubescent,  
needle not pungent.

Needle rhombic/quadrangular,  
all needles with many stomata.





***Needle discolorous, outer surface with 1-4 stomata lines.***

Needle long,  
predominantly (15-)20-35 mm.

Needle short,  
predominantly 8-15 mm.

*Picea purpurea*





*Picea purpurea*

Needles above shoot imbricate.



1 cm



*Picea mariana*



1 cm



*Picea mariana*

Needles above shoot raised.



1 cm



*Picea mariana*

Needles above shoot raised.

End bud not resinous,  
basal scales acicular.

Needle slender,  $\text{Ø} \leq 0,8 \text{ mm}$ .





*Picea glehnii*





*Picea glehnii*

Needles above shoot raised.

End bud not resinous,  
basal scales acicular.



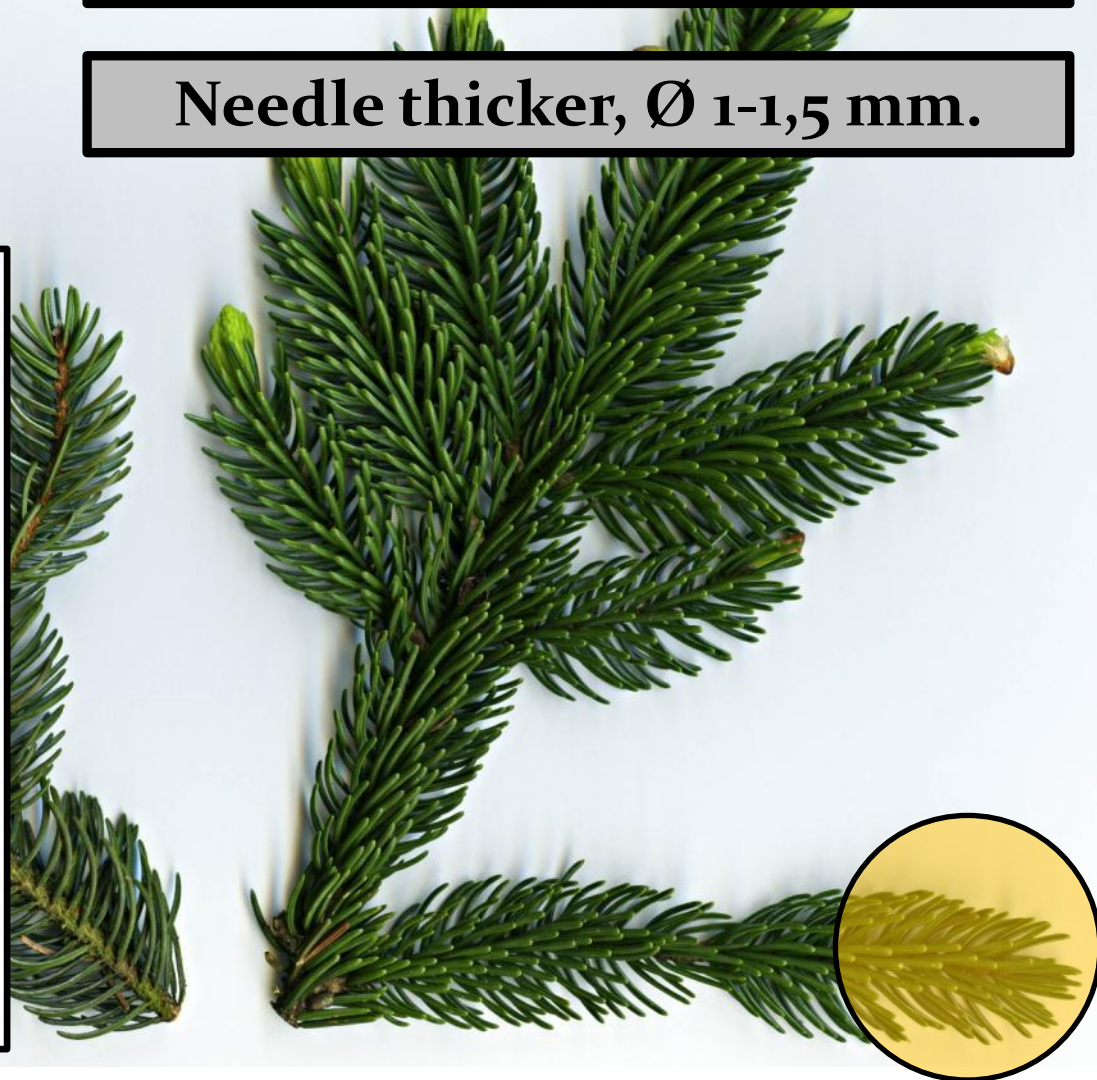


*Picea glehnii*

Needles above shoot raised.

End bud not resinous,  
basal scales acicular.

Needle thicker,  $\text{Ø}$  1-1,5 mm.





*Picea alcoquiana*





*Picea alcoquiana*

Needles above shoot raised.

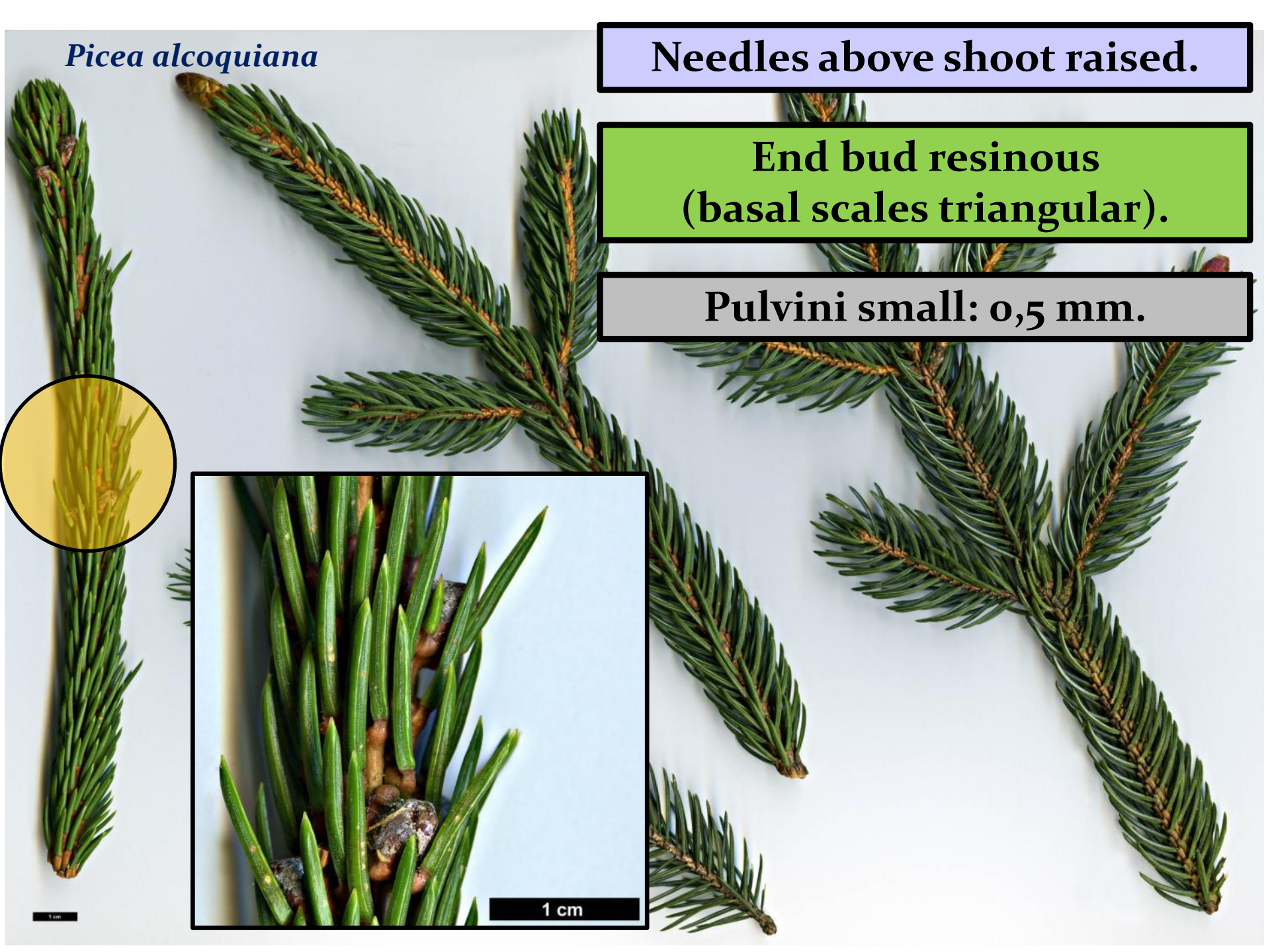
End bud resinous  
(basal scales triangular).

Pulvini small: 0,5 mm.



1 cm

1 cm





*Picea likiangensis*





*Picea likiangensis*

Needles above shoot raised.

End bud resinous  
(basal scales triangular).

Pulvini larger: 1-1,5 mm.



1 cm



1 cm





***GROUP B: NEEDLE CONCOLOUROUS***  
(surfaces clearly similar in colour to the naked eye)

*Picea wilsonii*





***GROUP B: NEEDLE CONCOLOUROUS***  
**(surfaces clearly similar in colour to the naked eye)**

**Needle short, predominantly  $\leq 15$ (-17) mm.**

**Needle long, predominantly 15-25(-more) mm.**

***GROUP B: NEEDLE CONCOLOUROUS***  
(surfaces clearly similar in colour to the naked eye)

**Needle short, predominantly  $\leq 15(-17)$  mm.**

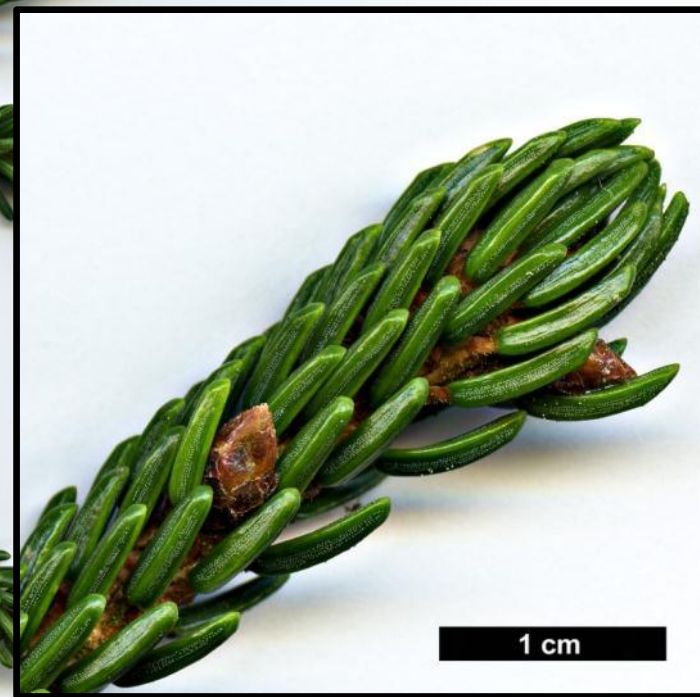
**Needle long, predominantly 15-25(-more) mm.**



*Picea orientalis*



*Picea orientalis*



**Needle short,  
length rather constant.**



*Picea morrisonicola*

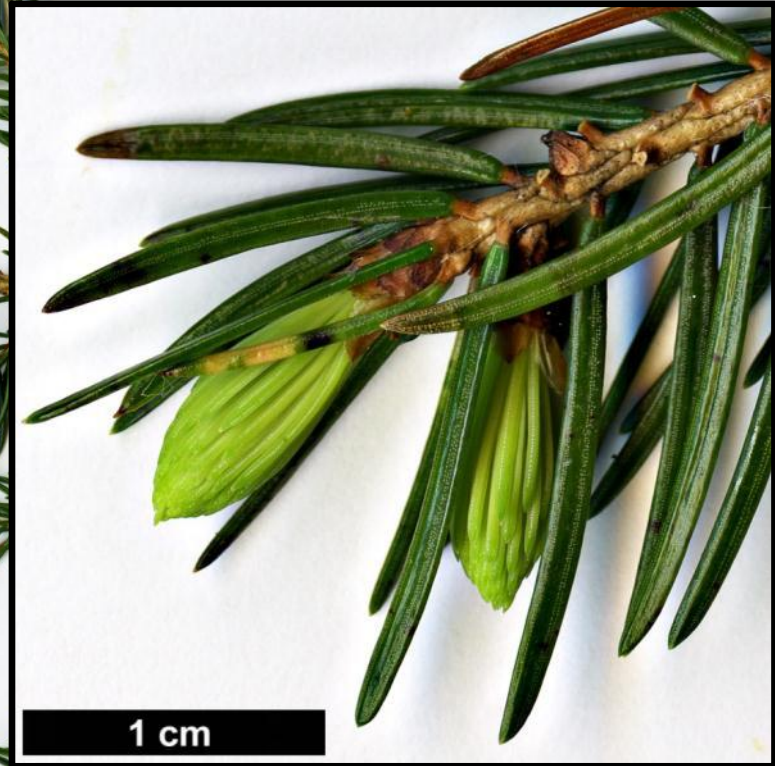


Needle length more variable.

*Picea morrisonicola*

Current year shoot **GLABROUS**.

Needles above shoot  
+/- appressed to slightly  
steeply directed forward.





*Picea glauca*





*Picea glauca*



Current year shoot **GLABROUS**.

Needles above shoot at least in part +/- strongly raised.

Bud not resinous.





*Picea koyamae*



Current year shoot **GLABROUS**.

Needles above shoot at least in part (strongly) assurgent.

Bud resinous.

*Picea koyamae*



1 cm



*Picea maximowiczii*





Shoot **PUBESCENT.**

Bud resinous,  
OR bud scales triangular.

*Picea maximowiczii*





*Picea rubens*

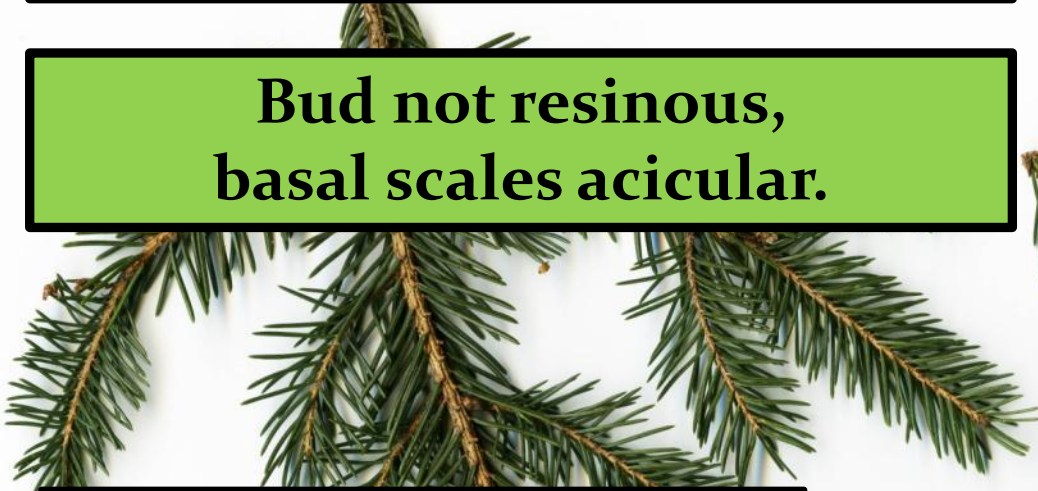




Shoot **PUBESCENT.**

Bud not resinous,  
basal scales acicular.

*Picea rubens*





***GROUP B: NEEDLE CONCOLOUROUS***  
**(surfaces clearly similar in colour to the naked eye)**

Needle short, predominantly  $\leq 15(-17)$  mm.

Needle long, predominantly 15-25(-more) mm.

*Picea smithiana*





*Picea smithiana*

**Shoot +/- pendulous.  
All needles directed forward  
AND 25-50 × 1 mm.**





*Picea wilsonii*

Current year and second year shoot  
**CONSPICUOUSLY PALE,**  
sometimes almost ivory.





*Picea wilsonii*

Current year and second year shoot  
**CONSPICUOUSLY PALE**,  
sometimes almost ivory.

Shoot slender, Ø +/- 2 mm.  
Needles below shoot directed  
sideward to forward, not pungent.





*Picea schrenkiana*

Current year and second year shoot  
**CONSPICUOUSLY PALE,**  
sometimes almost ivory.





*Picea schrenkiana*

Current year and second year shoot  
**CONSPICUOUSLY PALE**,  
sometimes almost ivory.

Shoot stout, Ø 2-4 mm.  
Needles below shoot directed  
rather forward, often pungent.

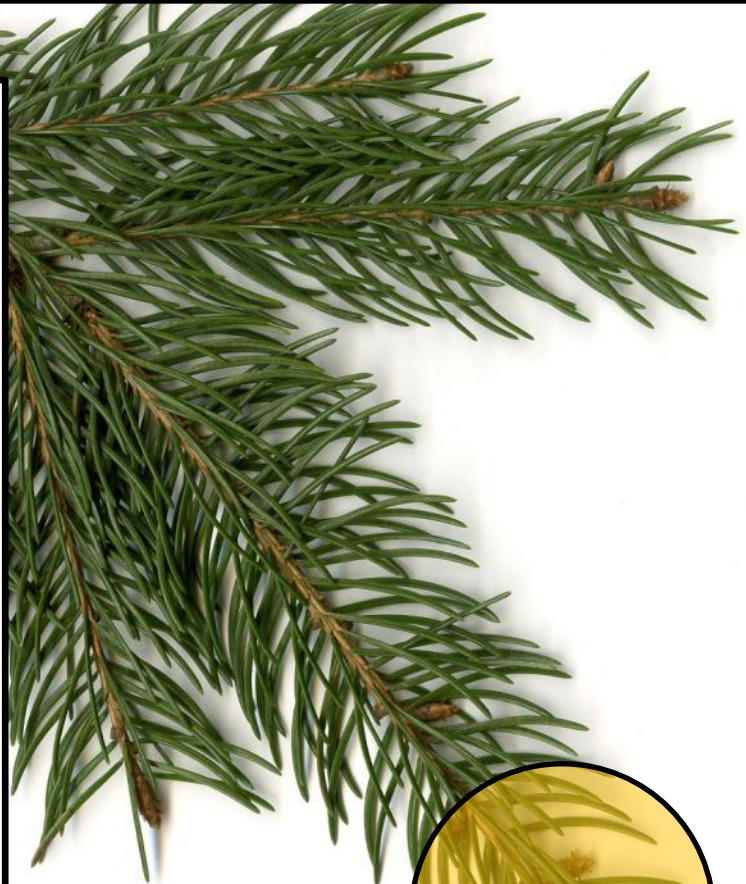




*Picea abies*

Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles not pungent, green.





*Picea engelmannii*





*Picea engelmannii*

Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles not pungent,  
greyish green to bluish green.





*Picea chihuahuana*





*Picea chihuahuana*



Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles pungent.

Needle  $\emptyset$  +/- flattened AND  
extremely sharp painfully pungent.

Needles greyish green  
to glaucous green.





*Picea martinezii*





*Picea martinezii*



Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles pungent.

Needle Ø +/- flattened AND  
extremely sharp painfully pungent.

Needles green.



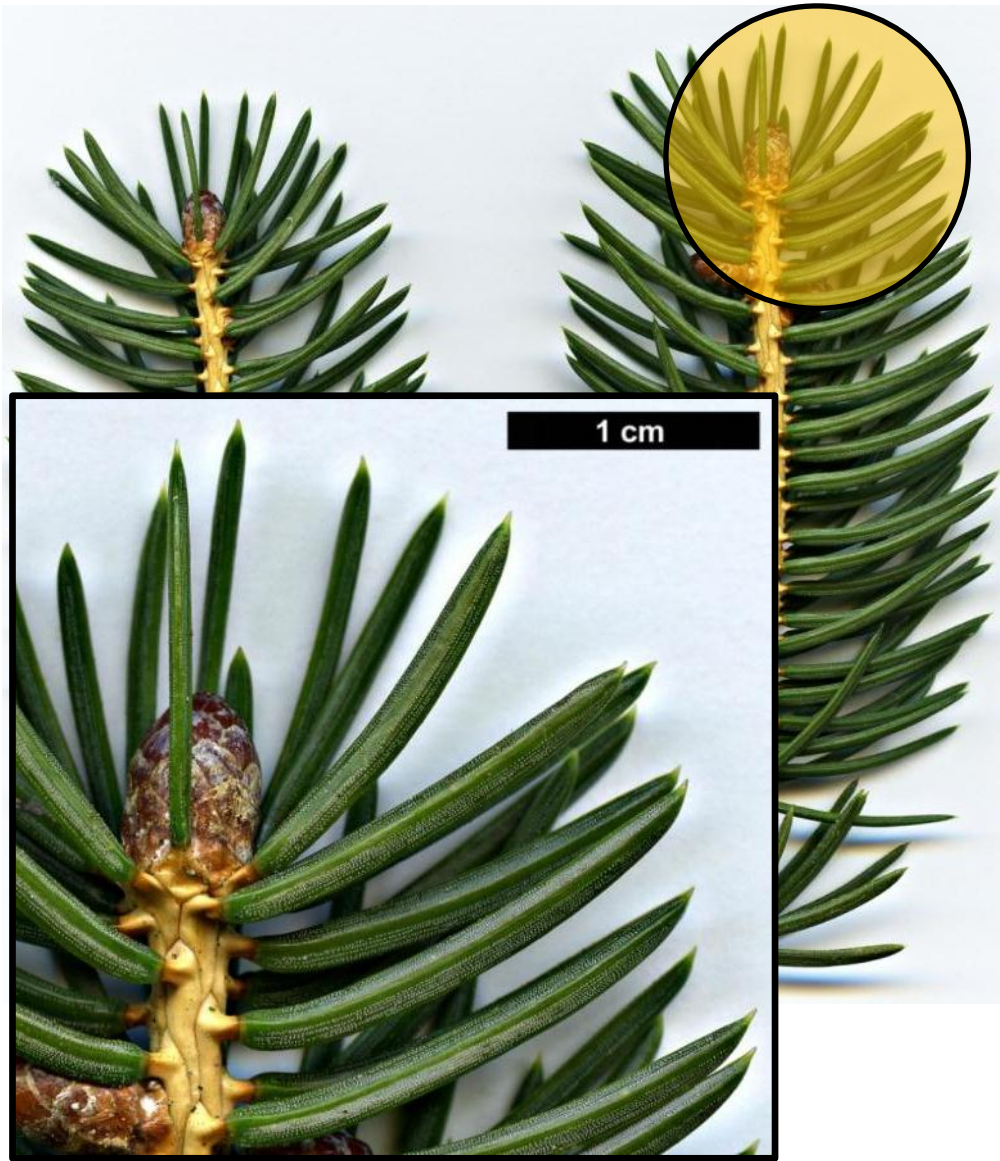
1 cm



*Picea torano*



*Picea torano*



Shoot **YELLOW TO BROWN**  
or at least so the second year.

**Needles pungent.**

Needle Ø rhombic to quadrangular  
(roll between fingers).

**Bud apex obtuse.**  
**Needles very painfully pungent.**



*Picea asperata*





*Picea asperata*

Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles pungent.

Needle Ø rhombic to quadrangular  
(roll between fingers).

Bud apex acute.  
Bud resinous.





*Picea pungens*





*Picea pungens*

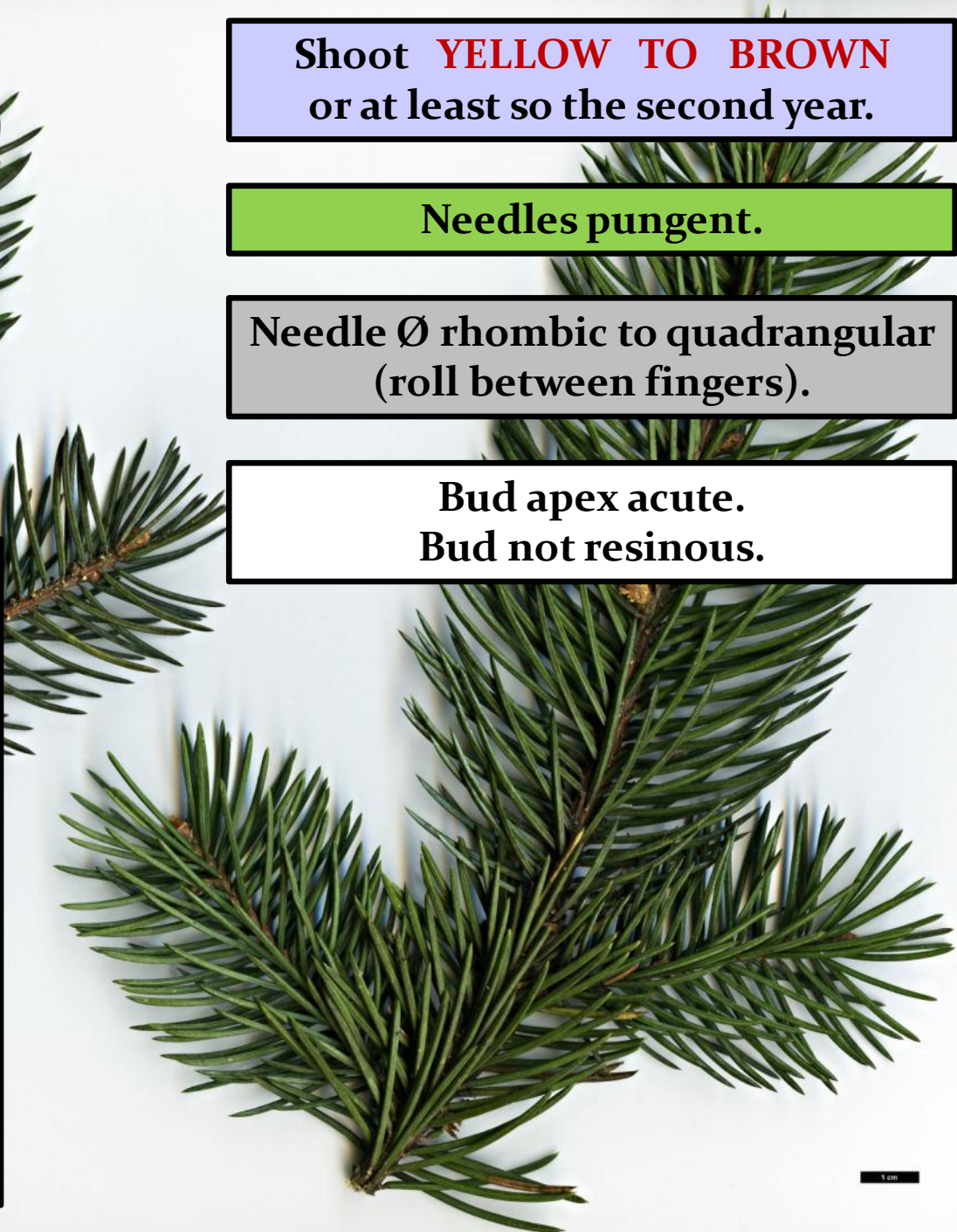


Shoot **YELLOW TO BROWN**  
or at least so the second year.

Needles pungent.

Needle Ø rhombic to quadrangular  
(roll between fingers).

Bud apex acute.  
Bud not resinous.







Ghent University Botanical Garden

JDL

vegetative identification keys  
[jan.de.langhe@telenet.be](mailto:jan.de.langhe@telenet.be)

[www.arboretumwespelaar.be](http://www.arboretumwespelaar.be)



- Home
- Missie en historiek
- Contact en bezoek
- Zoek een plant
- Plattegrond arboretum
- Plantencollectie
- Eigen selecties
- Instandhouding van soorten
- Fotogalerij
- Bomen in België (Beltrees)
- **Identificatiesleutels**
- Publicaties & Downloads
- Links

## Identificatiesleutels

Onderstaand kan je enkele identificatiesleutels vinden (in het Engels) voor houtachtige planten in West-Europese verzamelingen. Deze werden opgesteld door **Jan De Langhe**, dendroloog aan de Plantentuin van de Universiteit Gent, in samenwerking met het Arboretum Wespelaar. Opmerkingen en aantekeningen worden ten zeerste geapprecieerd en mogen naar Jan gestuurd worden op volgend emailadres: [jan.de.langhe@telenet.be](mailto:jan.de.langhe@telenet.be).

Je kan ook afbeeldingen van de bladeren ter illustratie van deze identificatiesleutels zoeken in de **database van afbeeldingen** (Afbeeldingen enkel voor niet-commercieel gebruik en met vermelding © Jan De Langhe).

Wanneer je een bezoek brengt aan Plantcol, een website die de grootste Belgische plantencollecties digitaal 'ontsluit', kan je op basis van de wetenschappelijke naam nakijken of die plant in Belgische collecties voorkomt.

-  [Acer](#) (Sapindaceae) - 12 January 2012
-  [Alnus](#) (Betulaceae) - 10 April 2013
-  [Betula](#) (Betulaceae) - 12 January 2012
-  [Buxaceae](#) - 12 March 2014
-  [Carpinus-Ostrya-Ostryopsis](#) (Betulaceae) - 12 June 2013
-  [Castanea](#) (Fagaceae) - 26 November 2012
-  [Corylus](#) (Betulaceae) - 12 January 2012
-  [Fagus](#) (Fagaceae) - 10 September 2013
-  [Fraxinus](#) (Oleaceae) - 17 September 2013
-  [Hamamelidaceae](#) (incl. Altingiaceae) - 9 May 2014
-  [Juglandaceae](#) - 12 January 2012
-  [Picea](#) (Pinaceae) - 24 August 2014
-  [Quercus](#) (Fagaceae) - 6 July 2012
-  [Stewartia](#) (Theaceae) - 12 January 2012
-  [Tilia](#) (Malvaceae) - 12 January 2012
-  [Viburnum](#) (Adoxaceae) - 21 October 2012



# thanks to

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**Gert Fortgens**

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**Joke Ossaer**

**Paul Reader**

**Arboretum Kalmthout**

**Arboretum Wespelaar**

**Ghent University Botanical Garden**

**Hillier Gardens and Arboretum**

**Pinetum Anthoine**

**Plantentuin Meise**

**Royal Botanic Garden Edinburgh/Dawyck BG**

**Royal Botanic Gardens Kew/Wakehurst Place**

**Trompenburg Tuinen en Arboretum**