

Recognition of seeds of forest species



Introduction

- This presentation is for students who are studying Forest Establishment. Its goal is to facilitate their preparation for partial credit for the “Recognition of seeds and fruits of forest species”.
- The presentation contains pictures and descriptions of seeds and fruits as seed processing products, i.e. in the condition in which they are used for sowing in forest nurseries.
- In addition to the recognition of seeds and fruits, students are required to learn the basic characteristics of seed production. These are listed for all species, but their knowledge will only be required for major, economically important species that are marked with an ✖ in the presentation. The required data is also shown in the summary tables in this presentation.

Basic characteristics of seed production:

Woody species	Start of collection	Number of seeds in 1 kg (pcs)
<i>Picea abies</i>	XI.	114 000
<i>Pinus sylvestris</i>	second year from 15.XI.	159 000
<i>Pinus nigra</i>	second year from XI.	48 000
<i>Pinus mugo</i>	second year from IX.	164 000
<i>Pinus strobus</i>	second year from IX.	51 000
<i>Larix decidua</i>	XII.	222 000
<i>Abies alba</i>	from 15.IX	21 000
<i>Pseudotsuga menziesii</i>	IX.	97 000
<i>Fagus sylvatica</i>	X.	4 300
<i>Quercus robur</i>	X.	250
<i>Quercus petraea</i>	X.	380
<i>Acer pseudoplatanus</i>	X.	10 500
<i>Acer platanoides</i>	IX.	8 000
<i>Fraxinus excelsior</i>	X.	13 500
<i>Carpinus betulus</i>	X.	21 000
<i>Alnus glutinosa</i>	IX.	833 000
<i>Alnus incana</i>	IX.	1 600 000
<i>Alnus viridis</i>	IX.	2 000 000
<i>Betula spp.</i>	from 15.VII.	6 500 000
<i>Tilia platyphyllos</i>	XI.	10 500
<i>Tilia cordata</i>	XI.	29 500
<i>Ulmus spp.</i>	from 20.V.	77 000

Recognition of seeds by macroscopic feature:

- the importance of seed recognition as a complementary feature in dendrology
- other seeds, free of wings and ovaries in seed production = extraction technology products
- no botanical system
- seed differentiation criteria:

a) shape

- spherical ... *Juglans nigra*, *Aesculus hippocastanum*
- oval ... *Quercus petraea*
- drop-shaped ... *Picea abies*, *Berberis vulgaris*
- spindle-shaped... *Cornus mas*, *Eleagnus angustifolia*

b) size

- variety from 1 mm (*Salix*, *Populus*) - over 1 cm (*Quercus*, *Aesculus*, *Juglans*)
- size for determining, for example *Larix decidua* a *Pseudotsuga menziesii*, *Pinus sylvestris* a *Pinus strobus*

c) colour

- e.g. the distinctive character of *Pinus sylvestris* x *Picea abies*, *Pinus strobus* x *P. nigra*

d) other characteristic

- residual wings in conifers *Abies alba*, *Pseudotsuga menziesii*, *Larix decidua*

Conifers

CONIFERS

- 3 groups:

- A) wing firmly attached to the seed - *Abies alba*, *Pseudotsuga menziesii*, *Larix decidua*, *Thuja occidentalis* - do not shed wings
- B) wing easily separable from the seed - *Picea abies*, *Pinus sylvestris*, *P. mugo*, *P. nigra*, *P. strobus*
- C) seeds without any flying apparatus - *Pinus cembra*, *Taxus baccata*, *Thuja orientalis*

Silver fir / Jedle bělokorá

(*Abies alba* Mill.) ✖



Flowering	V.–VI.
Collection	od 15.IX.
Weight of seeds in cones	14 %
Weight of 1000 seeds	47,4 g
Number of seeds in 1 kg	21 000 ks

Shape: irregularly triple-edged seeds

Colour: brown

Size: 8–13 mm

Note: there are always remains of the wings on the seeds, which are brown to purple, as well as visible resinous vesicles

Douglas fir / Douglaska tisolistá

(*Pseudotsuga menziesii* Mirbel. Franco) ✖



Fowering	V.–VI.
Collection	IX.
Weight of seeds in cones	1,5 %
Weight of 1000 seeds	10,3 g
Number of seeds in 1 kg	97 000 ks

Shape: triple-edged, egg-shaped, slightly flattened seeds

Colour: light brown

Size: 6–7 mm

Note: the rest of the wing is always on the seed and is lighter than the seed itself

European larch / Modřín opadavý

(*Larix decidua* Mill.)✖



Fowering	IV.–V.
Collection	XII.
Weight of seeds in cones	5,2 %
Weight of 1000 seeds	4,5 g
Number of seeds in 1 kg	222 000 ks

Shape: triple-edged, egg-shaped seeds

Colour: bulging side is light, matte, red-brown streaked with a brown tint

Size: 3–5 mm

Note: seed has always got a rest of wing that is dark brown and glossy

Arborvitae / Zerav západní

(*Thuja occidentalis* L.)



Fowering	V.
Fall/Colletion of seeds	IX.
Weight of seeds in strobiles -	
Weight of 1000 seeds	1,25 g
Number of seeds in 1 kg	800 000 ks

Shape: flat, linear elongated seeds with two membranous wings
Colour: light brown
Size: 3–5 mm
Note: seed always has a wing

Norway spruce / Smrk ztepilý

(*Picea abies* /L./ Karsten) ✖



Fowering	V.–VI.
Collection	XI.
Weight of seeds in cones	3,0 %
Weight of 1000 seeds	8,8 g
Number of seeds in 1 kg	114 000 ks

Shape: droplet-shaped seed, elongated at the tip, which is somewhat spirally twisted

Colour: brown with a violet tint

Size: 3–5 mm

Note: -

Scots pine / Borovice lesní

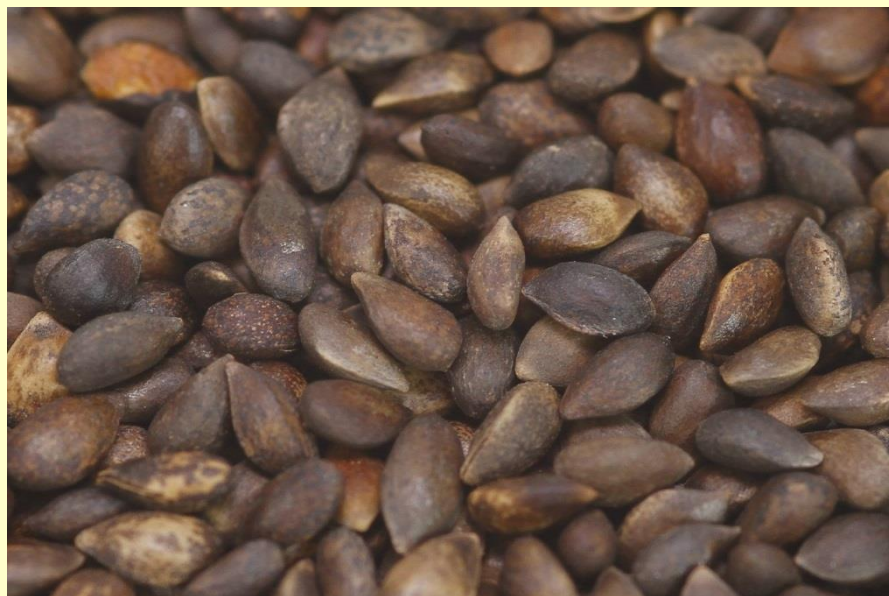
(*Pinus sylvestris* L.)✖



Fowering	V.–VI.
Collection	druhý rok od 15.XI.
Weight of seeds in cones	1,7 %
Weight of 1000 seeds	6,3 g
Number of seeds in 1 kg	159 000 ks

Shape: obtuse pointed, slightly flattened, double-edged seeds
Colour: variable, from yellow-white, brown to completely black
Size: 3–4 mm
Note: the seeds are distinctively marbled (multicoloured)

Mountain pine / Borovice horská (kleč) (*Pinus mugo* Turra)✗



Fowering	V.–VI.
Collection	druhý rok od IX.
Weight of seeds in cones	2,0 %
Weight of 1000 seeds	6,1 g
Number of seeds in 1 kg	164 000 ks

Shape: seed of egg with an oval to oblong shape

Colour: dark brown

Size: ca 4 mm

Note: unlike *Pinus sylvestris*, the seeds are not double-edged and are usually monocolour

Black pine / Borovice černá

(*Pinus nigra* Arnold)*

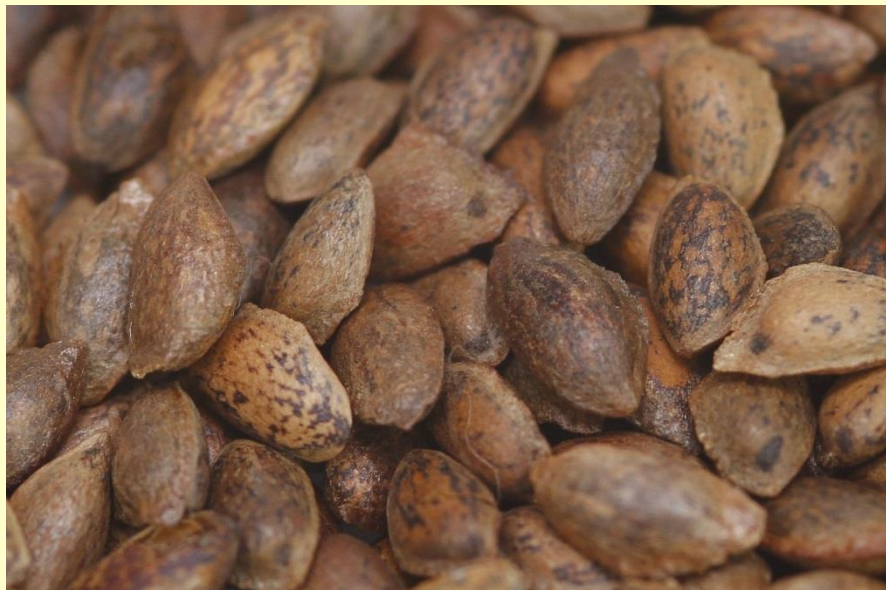


Fowering	V.–VI.
Collection	druhý rok od XI.
Weight of seeds in cones	3,0 %
Weight of 1000 seeds	20,8 g
Number of seeds in 1 kg	48 000 ks

- Shape: seed of egg with an oblong shape, obtuse pointed, slightly flattened, with two edges
- Colour: light brown, sprayed, matte
- Size: 6–7 mm
- Note: in comparison to *Pinus strobus*, the seeds are light and matte

White pine / Borovice vejmutovka

(*Pinus strobus* L.)✖



Fowering	V.–VI.
Fall/Colletion of seeds	druhý rok IX.
Weight of seeds in cones	3,0 %
Weight of 1000 seeds	19,5 g
Number of seeds in 1 kg	51 000 ks

Shape: obtuse pointed, slightly flattened, double-edged seeds of egg with an oblong shape

Colour: brown-black, dark streaked, glossy

Size: 4–6 mm

Note: compared to *Pinus nigra*, the seeds are darker and silky-shiny, the gloss fades with age and the seeds darken

Swiss stone pine / Borovice limba

(*Pinus cembra* L.)



Fowering	VI.–VII.
Collection	druhý rok IX.
Weight of seeds in cones	20,0 %
Weight of 1000 seeds	242,5 g
Number of seeds in 1 kg	4 100 ks

Shape: seed of egg shape, somewhat angular, obtuse pointed
Colour: light to dark brown, matte
Size: 8–10 mm
Note: -

English yew / Tis červený

(*Taxus baccata* L.)



Fowering	III.–IV.
Collection	X.
Weight of seeds in strobiles	12,5 %
Weight of 1000 seeds	58,7 g
Number of seeds in 1 kg	73 500 ks

- Shape: seed of egg shape, somewhat flattened at the tip, running two edges at the tip
- Colour: brown, glossy, light trace at the base
- Size: 4–5 mm
- Note: -

Oriental arborvitae / Zeravec východní

(*Platycladus orientalis* /L./ Franco)



Fowering	V.
Collection	IX.–X.
Weight of seeds in strobiles	-
Weight of 1000 seeds	20,2 g
Number of seeds in 1 kg	49 500 ks

Shape: seed of egg with an oblong shape, running three edges at the tip
Colour: brown to reddish with a light trace at the base
Size: 4–7 mm
Note: a shape resembling rye caryopsis

Common juniper / Jalovec obecný

(*Juniperus communis* /L./)



Fowering	IV.- V.
Collection	druhý rok X.
Weight of seeds in strobiles -	
Weight of 1000 seeds	13,6 g
Number of seeds in 1 kg	73 500 ks

Shape: triple-edged, glossy, resinous seeds without any wings
Colour: brown
Size: 2-3 mm
Note: -

Broadleaves

Sessile oak / Dub zimní

(*Quercus petraea* Liebl.) ✖



Flowering	IV.–V.
Collection	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	2 620 g
Number of seeds in 1 kg	380 ks

Shape: barrel-shaped acorns, widest in the lower third
Colour: umber-brown
Size: variable, 1,5–2,5 cm
Note:

Pedunculate oak / Dub letní

(*Quercus robur* L.) ✖



Flowering	IV.–V.
Collection	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	3 970 g
Number of seeds in 1 kg	250 ks

Shape: elongated to cylindrical acorns, widest in the middle
Colour: umber-brown
Size: variable, 2–3 cm
Note: fine longitudinal stripes visible in fresh to swollen acorns

Turkey oak / Dub cer (*Quercus cerris* L.)



Flowering	V.
Collection	druhý rok X.
Weight of seeds in fruits	–
Weight of 1000 seeds	3 600 g
Number of seeds in 1 kg	280 ks

Shape: acorn of elongated, ovate to cylindrical shape, widest in the middle, short pointed

Colour: brown

Size: 2–3 cm

Note: due to the ascending longitudinal stripe, the acorns are bumpy to the touch

Pubescent oak / Dub pýřitý, šípák (*Quercus pubescens* Willd.)



Flowering	V.
Collection	IX.– X.
Weight of seeds in fruits	–
Weight of 1000 seeds	1 600 g
Number of seeds in 1 kg	625 ks

Shape: pointed acorns of egg with an oblong shape

Colour: light brown

Size: 1,5 cm

Note: the lighter basal part on acorns, which was immersed in a deep cupule

Red oak / Dub červený (*Quercus rubra* L.)



Flowering	V.–VI.
Collection	druhý rok X.
Weight of seeds in fruits	–
Weight of 1000 seeds	3 220 g
Number of seeds in 1 kg	310 ks

Shape: broadly ovate acorns, cut at the base, ending with a hard tip

Colour: red-brown with a silvery felt tip

Size: 1,2–2,5 cm

Note:

European beech / Buk lesní

(*Fagus sylvatica* L.) ✖



Flowering	IV.–V.
Collection	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	234 g
Number of seeds in 1 kg	4 300 ks

Shape: sharply triple-edged beechnuts

Colour: red-brown, glossy, silvery felt at the tip

Size: do 1 cm

Note: -

Common hornbeam / Habr obecný

(*Carpinus betulus* L.) ✖



Flowering	IV.–V.
Collection	X.
Weight of seeds in fruits	55 %
Weight of 1000 seeds	48 g
Number of seeds in 1 kg	21 000 ks

Shape: flattened, distinctly ribbed nuts of egg shape

Colour: grey-brown to olive-brown

Size: 5–8 mm

Note: -

Sycamore maple / Javor klen

(*Acer pseudoplatanus* L.) ✖



Fowering	IV.–V.
Fall/Colletion of seeds	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	95 g
Number of seeds in 1 kg	10 500 ks

- Shape: double-samara with wings with a distinct rib on the outside and with tapering at the base, seed is spherical, pea-sized
- Colour: light brown, darker rib
- Size: 3–5 cm
- Note: the axes of the double-samara wings make a sharp angle

Norway maple / Javor mléčný

(*Acer platanoides* L.) ✖



Flowering	IV.–V.
Collection	IX.
Weight of seeds in fruits	–
Weight of 1000 seeds	125 g
Počet semen v 1 kg	8 000 ks

Shape: double-samara with wide wings not tapering sharply to the base, seed is triangular and flat

Colour: umber-brown

Size: 4–5 cm

Note: the axes of the double-samara wings make an obtuse angle

Common maple / Javor babyka (Babyka obecná)

(*Acer campestre* L.)



Flowering	IV.–V.
Collection	IX.
Weight of seeds in fruits	–
Weight of 1000 seeds	80 g
Number of seeds in 1 kg	12 500 ks

- Shape: triangular flat double-samara, wings not tapering sharply to the base
- Colour: yellow-brown
- Size: 2–4 cm
- Note: the axes of the double-samara wings make a nearly straight angle

Tatar maple / Javor tatarský

(*Acer tataricum* L.)



Flowering	V.–VI.
Fall/Collection of seeds	IX.
Weight of seeds in fruits	–
Weight of 1000 seeds	43 g
Number of seeds in 1 kg	23 000 ks

- Shape: double-samara with an arched curved wing with a distinct rib on the outside, seeds are triangular and slightly bulging
- Colour: brown
- Size: 2–3 cm
- Note: the axes of the double-samara wings make a sharp angle, compared to *Acer pseudoplatanus*, seed is not spherical

Boxelder / Javor jasanolistý

(*Negundo aceroides* Moench.)



Flowering	IV.–V.
Fall/Collection of seeds	IX.
Weight of seeds in fruits	–
Weight of 1000 seeds	50 g
Number of seeds in 1 kg	20 000 ks

Shape: elongated, longitudinally grooved double-samara with a paddle wing

Colour: light brown to white-grey

Size: 3,5–4 cm

Note: the seed reaches up to 1/3 of the total length of the samara

European ash / Jasan ztepilý

(*Fraxinus excelsior* L.)✖



Flowering	IV.–V.
Fall/Collection of seeds	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	74 g
Number of seeds in 1 kg	13 500 ks

- Shape: samara with a tongue-like wing, flat seed is at the base of the wing
- Colour: yellow-brown
- Size: 3 cm
- Note: the seed is flat and seated in the bottom half of a yellow to brown wing, which is vaguely divided into two halves

White ash / Jasan americký (*Fraxinus americana* L.)



Flowering	V.–VI.
Collection	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	g
Number of seeds in 1 kg	ks

Shape: samara with a long pointed wing, seed is cylindrical

Colour: hay yellow

Size: seed of 12–16 mm

Note: unlike *Fraxinus excelsior*, the seed is cylindrical and extends to half the length of the wing

Ailanthus / Pajasan žlaznatý (*Ailanthus altissima* Mill. Swingle)



Fowering	IV.–V.
Collection	IX.
Weight of seeds in fruits	–
Weight of 1000 seeds	26 g
Number of seeds in 1 kg	38 500 ks

Shape: lenticular seed in the middle of the spirally twisted membranous wing

Colour: yellow-orange in summer, dark brown to grey in autumn

Size: 3–4 cm

Note: -

Broad-leaved lime / Lípa velkolistá

(*Tilia platyphyllos* Scop.) ✖



Fowering	VI.–VII.
Collection	XI.
Weight of seeds in fruits	60 %
Weight of 1000 seeds	97 g
Number of seeds in kg	10 500 ks

Shape: spherical to slightly elongated grey felt-like nuts with 4–5 distinct ribs
Colour: grey-brown
Size: 0,6–0,8 cm
Note: the pericarp is very hard, it cannot be crushed

Small-leaved lime / Lípa malolistá (*Tilia cordata* Miller) ✖



Flowering	VI.–VII.
Collection	XI.
Weight of seeds in fruits	50 %
Weight of 1000 seeds	34 g
Number of seeds in 1 kg	29 500 ks

Shape: egg-shaped to spherical nuts without distinct ribs
Colour: dark red-brown to brown
Size: 5 mm
Note: the nuts are bare and easily crushed

Scotch elm / Jilm drsný (horský)

(*Ulmus scabra* Mill.) ✖



Flowering	III.–IV.
Collection	od 20. V.
Weight of seeds in fruits	–
Weight of 1000 seeds	13 g
Number of seeds in 1 kg	77 000 ks

Shape: flat seed is in the middle of a membranous circular to elliptical wing
Colour: beige to light green
Size: 2 cm
Note: seed is in the middle of the wing

English elm / Jilm habrolistý (*Ulmus minor* Mill.) ✖



Flowering	III.–IV.
Collection	from 20.V.
Weight of seeds in fruits	–
Weight of 1000 seeds	13,0 g
Number of seeds in 1 kg	77 000 ks

Shape: samara with a heart-shaped fine wing

Colour: light brown

Size: 1–2 mm

Note: the seed is eccentrically shifted to the lower edge of the wing

European white elm / Jilm vaz

(*Ulmus laevis* Pall.) ✖



Flowering	III.–IV.
Fall/Collection of seeds	from 20.5.
Weight of seeds in fruits	–
Weight of 1000 seeds	7,5 g
Number of seeds in 1 kg	125 000 ks

Shape: seed of egg shape, relatively narrow samara with a hairy edge of a stiffer wing

Colour: light brown

Size: 1–1,5 cm

Note: seed is in the middle of the wing

Black alder / Olše lepkavá

(*Alnus glutinosa* Gaert.) ✖



Fowering	III.–IV.
Fall/Colletion of seeds	IX.
Weight of seeds in strobiles	12 %
Weight of 1000 seeds	1,2 g
Number of seeds in 1 kg	833 000 ks

Shape: circular to pentagonal achene with a narrow leathery wing
Colour: dark brown
Size: 2–4 mm
Note: the wing is difficult to distinguish from its own seed

Grey alder / Olše šedá

(*Alnus incana* /L./ Moench.) ✖



Fowering	III.–IV.
Collection	IX.
Weight of seeds in strobiles	10,5 %
Weight of 1000 seeds	0,6 g
Number of seeds in 1 kg	1,6 mil.ks

Shape: obovate achene lined with a membranous wing
Colour: medium brown
Size: 2–4 mm
Note: the wing is easy to distinguish from its own seed

Green alder / Olše zelená

(*Alnus viridis* Chaix.DC) ✖



Flowering	III.–IV.
Fall/Collection of seeds	IX.
Weight of seeds in strobiles	8 %
Weight of 1000 seeds	0,5 g
Number of seeds in 1 kg	2 mil. ks

Shape: flat achene with two distinctive wide membranous wings

Colour: light brown to greenish

Size: 2–4 mm

Note: the wings are as broad as the achene; compared to birch, there are no supporting tri-tipped bracts

European birch / Bříza bělokorá (*Betula pendula* Roth.) ✖



Fowering	IV.–V.
Fall/Colletion of seeds	od 15. VII.
Weight of seeds in strobiles	25 %
Weight of 1000 seeds	0,15 g
Number of seeds in 1 kg	6,5 mil. ks



Shape: flat achene with two wide memraneous wings

Colour: yellow-brown

Size: 2–3 mm

Note: the presence of tri-tipped bracts in birch seeds is easily distinguished from the *Alnus viridis* seed, which is very similar in colour

Black walnut / Ořešák černý

(*Juglans nigra* L.)



Fowering	IV.–V.
Collection	X.
Weight of seeds in fruits	50 %
Weight of 1000 seeds	12 300 g
Number of seeds in 1 kg	80 ks

Shape: spherical to broadly ovate, irregularly and roughly ribbed stone on the surface

Colour: dark brown to black

Size: 3–4 cm

Note: -

Horsechestnut / Jírovec mad'al

(*Aesculus hippocastanum* L.)



Flowering	V.
Collection	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	11 530 g
Number of seeds in 1 kg	90 ks

Shape: irregularly hemispherical, smooth seeds
Colour: bronze-brown, high-gloss and 1-2 cm² large light trace
Size: 2–3 cm
Note: the gloss fades with age and the seeds darken

Sweet chestnut / Kaštanovník jedlý

(*Castanea sativa* Miller)



Fowering	V.–VI.
Fall/Colletion of seeds	X.
Weight of seeds in fruits	–
Weight of 1000 seeds	1000 g
Number of seeds in 1 kg	100 ks

Shape: irregularly hemispherical achenes, pointed at the tip
Colour: brown, with a distinct light brown trace, silvery felt at the tip
Size: 2–3 cm
Note: -

European aspen / Topol osika

(*Populus tremula* L.)



Fowering	III. –IV.
Fall/Colletion of seeds	V.
Weight of seeds in fruits	
Weight of 1000 seeds	0,1 g
Number of seeds in 1 kg	10 mil. ks

Shape: elongated pear-shaped seeds (with choke at the base)

Colour: brownish to pinkish

Size: less than 1 mm

Note: -

Sweet cherry / Třešeň ptačí

(*Prunus avium* L.)



Fowering	IV.–V.
Fall/Colletion of seeds	VI.
Weight of seeds in fruits	8 %
Weight of 1000 seeds	166 g
Number of seeds in 1 kg	6 500 ks

Shape: spherical to ovate, only slightly flattened stone, smooth at the surface
Colour: hay yellow
Size: 8 mm
Note: a smooth surface as opposed to the stones of *Prunus spinosa*, which are rough on the surface

Black locust / Trnovník akát

(*Robinia pseudoacacia* L.)



Flowering	V.–VI.
Fall/Collection of seeds	X.
Weight of seeds in fruits	25 %
Weight of 1000 seeds	19,0 g
Number of seeds in 1 kg	52 500 ks

Shape: kidney-shaped, flat seeds

Colour: dark brown to black

Size: 5 mm

Note: seeds of *Laburnum* have the same shape, colour and size but are not flat

Honey locust / Dřezovec trojtrnný

(*Gleditschia triacanthos* L.)



Flowering	V.–VI.
Fall/Collection of seeds	XI.–XII.
Weight of seeds in fruits	
Weight of 1000 seeds	170 g
Number of seeds in 1 kg	6 000 ks

Shape: oval, flattened seeds with scars at the base
Colour: dark and also light brown
Size: 8 mm
Note:

European mountain ash / Jeřáb ptačí

(*Sorbus aucuparia* L.)



Flowering	V.–VI.
Collection	IX.
Weight of seeds in fruits	3 %
Weight of 1000 seeds	3,4 g
Number of seeds in 1 kg	294 000 ks

Shape: droplet-shaped seeds, slightly flattened, J-shaped at the tip
Colour: cinnamon brown to reddish, glossy
Size: 3 mm
Note: the seedcoat is smooth or wrinkled

White mulberry / Morušovník bílý

(*Morus alba* L.)



Fowering	V.
Fall/Colletion of seeds	VII.
Weight of seeds in fruits	1,1 %
Weight of 1000 seeds	2,1 g
Number of seeds in 1 kg	555 000 ks

Shape: double- to triple-edged, hard achene

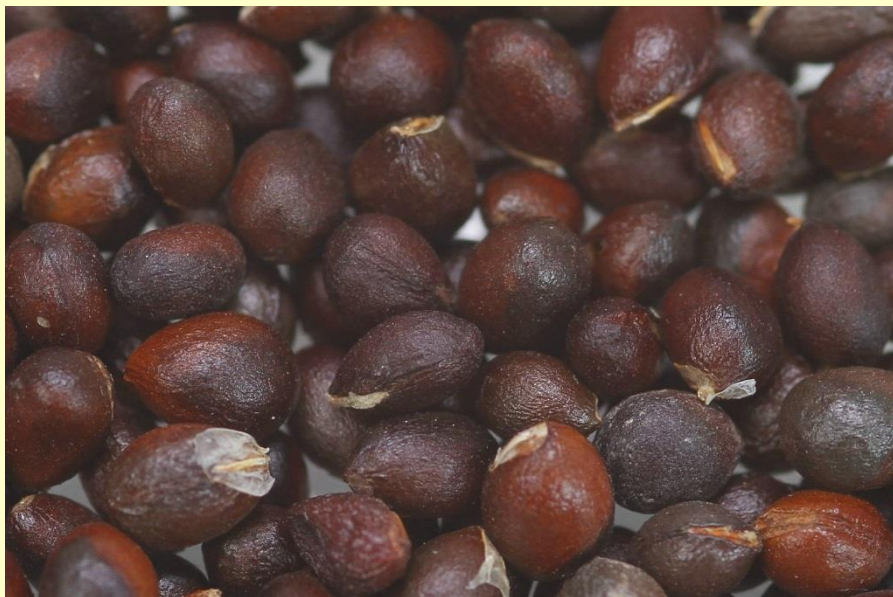
Colour: umber to light brown

Size: less than 2 mm

Note:

Shrubs

Warty-barked spindle tree / Brslen bradavičnatý (*Euonymus verrucosus* Scop.)



Flowering	IV.–VI.
Fall/Collection of seeds	VIII.–IX.
Weight of seeds in fruits	
Weight of 1000 seeds	20 g
Number of seeds in 1 kg	50 000 ks

Shape: ovate to slightly pointed

Colour: part of the seed originally hidden in the aril is reddish, reddish-brown in older seeds, the part originally protruding from the aril is black, two-coloured seeds

Size: 4–5 mm

Note: seeds have a black spot

European euonymus / Brslen evropský

(*Euonymus europaeus* L.)



Fowering	IV.–VI.
Fall/Colletion of seeds	IX.–X.
Weight of seeds in fruits	12–18 %
Weight of 1000 seeds	70 g
Number of seeds in 1 kg	14 000 ks

Shape: spindle-shaped, pointed seeds completely covered by an orange, non-fleshy aril

Colour: seeds are pinkish when the aril is removed

Size: 4–6 mm

Note: -

European cranberry viburnum / Kalina obecná

(*Viburnum opulus* L.)



Flowering	V.–VI.
Fall/Collection of seeds	VIII.–IX.
Weight of seeds in fruits	
Weight of 1000 seeds	51 g
Number of seeds in 1 kg	20 000 ks

Shape: circular to heart-shaped, flat stone divided by a middle rib into two symmetrical halves

Colour: pinkish, later brown-red

Size: 8 mm

Note: -

Wayfaring viburnum / Kalina tušalaj

(*Viburnum lantana* L.)



Fowering	V.–VI.
Fall/Colletion of seeds	IX.–X.
Weight of seeds in fruits	
Weight of 1000 seeds	40 g
Number of seeds in 1 kg	25 000 ks

Shape: broadly ovate to elliptical flat, robbled stone

Colour: umber brown

Size: 8 mm

Note: the stone is similar to the nut of *Carpinus betulus* but is substantially flatter

English hawthorn / Hloh obecný

(*Crataegus laevigata* /Poir./ DC.)



Flowering	V.–VI.
Fall/Collection of seeds	IX.–X.
Weight of seeds in fruits	15–22 %
Weight of 1000 seeds	46 g
Number of seeds in 1 kg	20 000 ks

Shape: irregular hemispherical seeds with two recesses on the inside
and with longitudinal grooving on the outside

Colour: yellow-brown

Size: 3–5 mm

Note: the shape of the seeds is similar to a coffee bean

Common hawthorn / Hloh jednosemenný (*Crataegus monogyna* Jacq.)



Flowering	V.–VI.
Fall/Collection of seeds	IX.–X.
Weight of seeds in fruits	16–23 %
Weight of 1000 seeds	125 g
Number of seeds in 1 kg	8 000 ks

Shape: elliptical or spherical seed with two grooves at the surface
Colour: light brown
Size: 4–6 mm
Note: a regular shape compared to *Crataegus laevigata*

Black thorn / Trnka obecná (*Prunus spinosa* L.)



Flowering	IV.–V.
Fall/Collection of seeds	X.
Weight of seeds in fruits	9–15 %
Weight of 1000 seeds	170 g
Number of seeds in 1 kg	5 600 ks

- Shape: spherical to ovate stone, slightly flattened with a distinct keel, rough on the surface
- Colour: light brown
- Size: 6–7 mm
- Note: the stones are coarse and rough, unlike *Prunus avium*, the stones of which are smooth

European elder / Bez černý (*Sambucus nigra* L.)



Flowering	V.–VI.
Fall/Collection of seeds	VIII.
Weight of seeds in fruits	4–6 %
Weight of 1000 seeds	3,1 g
Number of seeds in 1 kg	325 000 ks

Shape: elongated, flattened stones

Colour: light brown with a s purple hue

Size: 2–3 mm

Note: compared to *Sambucus racemosa*, stones are larger

European red elder / Bez červený (*Sambucus racemosa* L.)



Flowering	V.
Fall/Collection of seeds	VII.–VIII.
Weight of seeds in fruits	4–10 %
Weight of 1000 seeds	2,3 g
Number of seeds in 1 kg	440 000 ks

Shape: elongated, flattened stones
Colour: umber to pinkish
Size: 2 mm
Note: -

Oleaster / Hlošina úzkolistá (*Eleagnus angustifolia* L.)



Flowering	V.–VI.
Fall/Collection of seeds	X.–XI.
Weight of seeds in fruits	
Weight of 1000 seeds	g
Number of seeds in 1 kg	ks

Shape: barrel-shaped to spindle-shaped, slightly pointed stones
Colour: brown, alternate longitudinal light and dark brown stripes
Size: 1 cm
Note: -

Cornelian cherry / Dřín obecný

(*Cornus mas* L.)



Flowering	III.– IV.
Fall/Collection of seeds	VIII.
Weight of seeds in fruits	11–20 %
Weight of 1000 seeds	182 g
Number of seeds in 1 kg	5 400 ks

Shape: spindle-shaped stones with 4 distinct ribs, running from the base to about half the length of the stone

Colour: hay yellow to pinkish

Size: 11–14 mm

Note: -

Blood twig / Svída krvavá (*Swida sanguinea* /L./ Opiz)



Flowering	V.–VI.
Fall/Collection of seeds	VIII.–IX.
Weight of seeds in fruits	
Weight of 1000 seeds	52 g
Number of seeds in 1 kg	25 000 ks

Shape: spherical to broadly elliptical stone finely grooved at the surface
Colour: divided by alternating light and dark green stripes from pole to pole
Size: 5–6 mm
Note: similar to a child's ball

Common privet / Ptačí zob obecný

(*Ligustrum vulgare* L.)



Flowering	VI.–VII.
Fall/Collection of seeds	IX.– X.
Weight of seeds in fruits	17–25 %
Weight of 1000 seeds	18,3 g
Number of seeds in 1 kg	54 500 ks

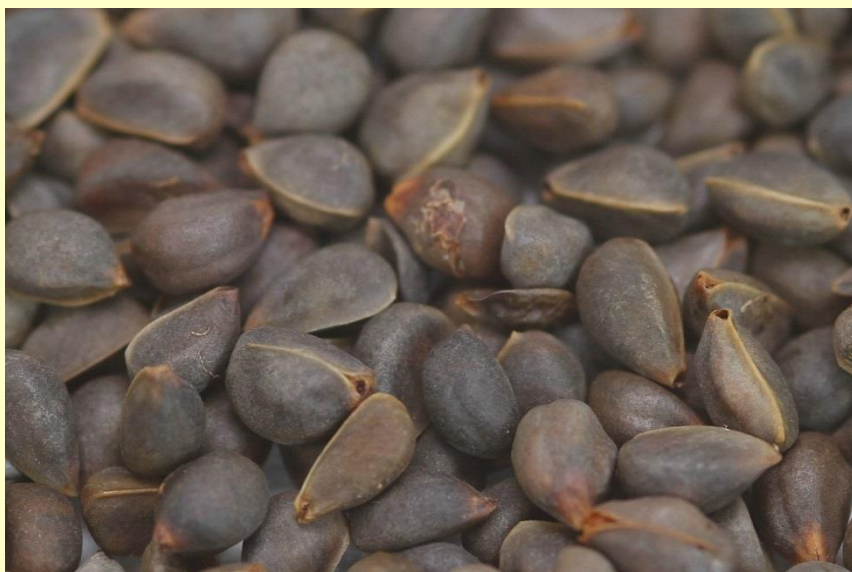
Shape: semi-elliptical, plinth-shaped (recessed from the inside, bulged on the outside)

Colour: violet-brown to dark brown

Size: 4–6 mm

Note: -

European buckthorn / Řešetlák počistivý (*Rhamnus cathartica* L.)



Fowering	V.–VI.
Fall/Colletion of seeds	IX.–X.
Weight of seeds in fruits	
Weight of 1000 seeds	15 g
Number of seeds in 1 kg	66 500 ks

Shape: spherical sectors - like $\frac{1}{4}$ spheres

Colour: grey to black

Size: 4–5 mm

Note: –

European bladdernut / Klokoč zpeřený (*Staphylea pinnata* L.)



Flowering	V.–VI.
Fall/Collection of seeds	X.–XI.
Weight of seeds in fruits	
Weight of 1000 seeds	375 g
Number of seeds in 1 kg	3 000 ks

Shape: obovate, pear-shaped seeds (with choke at the base), with a big disciform trace

Colour: light brown with a grey-white trace

Size: 1 cm

Note: similar to a jug without a handle

Common barberry / Dřišťál obecný

(*Berberis vulgaris* L.)



Flowering	V.
Fall/Collection of seeds	IX.–X.
Weight of seeds in fruits	
Weight of 1000 seeds	12 g
Number of seeds in 1 kg	83 300 ks

Shape: elongated droplet-shaped seeds with a longitudinal recess

Colour: dark brown, somewhat glossy

Size: 2–3 mm

Note: similar to spruce seeds but they haven't any spirally twisted tip like spruce

Buckthorn / Krušina olšová

(*Frangula alnus* Mill.)



Flowering	V.–VI.
Fall/Collection of seeds	VII.–X.
Weight of seeds in fruits	10–15 %
Weight of 1000 seeds	23,7 g
Number of seeds in 1 kg	42 000 ks

Shape: circular, slightly flattened seeds ending with a characteristic split
Colour: olive green
Size: 4–5 mm
Note: seeds are similar to fine lentils in shape and colour

European hazel / Líska obecná

(*Corylus avellana* L.)



Flowering	II.–III.
Fall/Collection of seeds	IX.
Weight of seeds in fruits	
Weight of 1000 seeds	1 151 g
Number of seeds in 1 kg	900 ks

Shape: broadly ovate to elongated, slightly flattened nut running two edges at the obtuse tip

Colour: brown

Size: 1,5–2 cm

Note: -

Staghorn stumach / Škumpa ocetná (*Rhus typhina*)



Flowering	VI.–VII.
Fall/Collection of seeds	X.
Weight of seeds in fruits	
Weight of 1000 seeds	7,7 g
Number of seeds in 1 kg	13 000 ks

Shape: spherical drupes, covered with fine hairs
Colour: bright wine-red
Size: 2 mm
Note: -

Canker rose / Růže šípková

(*Rosa canina* L.)



Flowering	V.–VI.
Fall/Collection of seeds	IX.
Weight of seeds in fruits	19–33 %
Weight of 1000 seeds	16,6 g
Number of seeds in 1 kg	60 000 ks

Shape: rather wedge-shaped, triple- to multi-edged samara
Colour: yellow-orange to red
Size: 4 mm
Note: -

Common laburnum / Štědřenec odvislý

(*Laburnum anagyroides* Medic.)



Flowering	IV.–VI.
Fall/Collection of seeds	VIII.– IX.
Weight of seeds in fruits	
Weight of 1000 seeds	g
Number of seeds in 1 kg	ks

Shape: kidney-shaped, rather hemispherical seeds

Colour: brown-black

Size: 4 mm

Note: the seeds are not flat like *Robinia pseudoacacia*

Hop tree / Křídlatec trojlistý

(*Ptelea trifoliata* L.)



Flowering	V.–VI.
Fall/Collection of seeds	X.
Weight of seeds in fruits	
Weight of 1000 seeds	g
Number of seeds in 1 kg	ks

Shape: seed is in the middle of leathery wing with distinctive nervation
Colour: yellow-brown
Size: 2,5 cm
Note: in contrast to *Ulmus glabra*, *Ptelea* has a leathery wing

Thank you for your attention