

Cultivars of *Alnus* Mill. (alder) and the contribution of Polish collections and nurseries for the dissemination and preservation of such cultivars

Odmiany *Alnus* Mill. (olsza) oraz wkład polskich kolekcji i szkółek w ich upowszechnianie i zachowanie

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ABSTRACT: Some 50 named cultivars of different *Alnus* species are known today; the first cultivar was already described in 1788. There is no current overall coverage of these varieties; some are considered lost to cultivation, very few of them are now part of modern plantings, most of them are only found in a few special collections. These cultivars show a remarkable variation in terms of growth, twig habit or leaf character. In Poland, the Zamoycki Nursery cultivated already around the turn of the last century a remarkable number of *Alnus* varieties. Today, only a few nurseries worldwide still propagate a larger number of varieties. Whenever information has been gathered, these cultivars are described in this paper, which aims to contribute towards the preservation of some of the beautiful or remarkable cultivars of alder (*Alnus*).

Key words: *Alnus*, alder, cultivars, Polish collections

History of *Alnus* cultivars

For centuries, keen gardeners and plant enthusiasts have selected interesting plants that differ in one or more aspects from the common type. Plants with variegated or lacinate leaves, fastigiated or weeping growth (or, in other genera than *Alnus*, also double flowers or different flower colours) were thus the first “cultivars”. The methods of vegetative propagation had already been developed, making it possible to multiply these plants, which were initially a great rarity.

Most probably, the first record of an *Alnus* different from the common form was a lacinate common alder, *Alnus glutinosa* ‘Laciniata’, described already in 1755 by Duhamel du Monceau or in 1788 as *Betula laciniata* by Ehrhardt in his “Beiträge zur Naturkunde”. This alder must have been

known before and was already part of the dendrological inventory of famous parks of that time, as Ehrhardt states, “it grows in the gardens in the Netherlands and England, and also in Harbke and Herrenhausen”. It is not surprising that Loudon (1844) describes and illustrates this cultivar in his monumental work (fig. 3).

In 1790, Lundmark published a description together with an illustration of a lacinate form of *Alnus incana* as “*Betula pinnata*”, still in cultivation today as *A. incana* ‘Pinnata’. A few years later, in 1787 and 1788, Gleditsch published a short description along with an illustration (fig. 1) of a more or less lacinate form of the common alder as f. *quercifolia*, found in a park in Berlin. Willdenow (1796) mentioned the same tree, which now we know as *A. glutinosa* ‘Quercifolia’. In 1807, Peter Thunberg illustrated a similar form (fig. 2) as “*Betula Laciniata*”.



Fig. 1. “Die eichenblättrige Erle” (*Alnus glutinosa* ‘Quercifolia’) in: Gleditsch, 1788

Ryc. 1. „Olsza dębolistna” (*Alnus glutinosa* ‘Quercifolia’) za: Gleditsch, 1788



Fig. 3. *Alnus glutinosa* ‘Laciniatia’ is also one of the cultivars which is described in Loudon (1844)

Ryc. 3. *Alnus glutinosa* ‘Laciniatia’ to jeden z kultywarów opisanych przez Loudona (1844)



Fig. 2. Peter Thunberg described and illustrated “*Betula Laciniata*” (*A. glutinosa* ‘Laciniatia’) in 1807 (fig. 1a)

Ryc. 2. Peter Thunberg opisał i zaprezentował „*Betula Laciniata*” (*A. glutinosa* ‘Laciniatia’) w swojej pracy z 1807 (ryc. 1a)

In the following century, only a handful more forms of alder have been observed and publicised. At the end of the 19th century, a total of 12 *Alnus* cultivars were known, all of which are still known in cultivation today. The Arbo-retum Muskau, Count Pückler’s old landscape park, nowa-days divided by the German-Polish border, cultivated ca. 27 varieties of *Alnus* in 1864, many of them cultivars (Petzold & Kirchner, 1864). Around 1900, the Zamoyski Nursery in Podzamcze cultivated six varieties of *A. glutinosa* and *A. incana*. In their catalogues between 1900 and 1918, numerous illustrations of these cultivars were published (“Cennik ilustrowany drzew i krzewów”, 1899–1918, fig. 4). In the 1920s, the Späth Nursery, Berlin, listed a wide range of more than 75 different *Alnus* in their nursery, many of them cultivars (Späth, 1930).

A note on taxonomy and nomenclature

Species designation – Cultivars of *Alnus* are sometimes incorrectly classified. A common mistake is to mix cultivars of *A. glutinosa* (common alder) and *A. incana* (grey alder). In nurseries, one may find, for example, *A. incana* ‘Razzmatazz’ sometimes mislabelled as *A. glutinosa* ‘Razzmatazz’, or *A. incana* ‘Pendula’ as *A. glutinosa* ‘Pendula’.

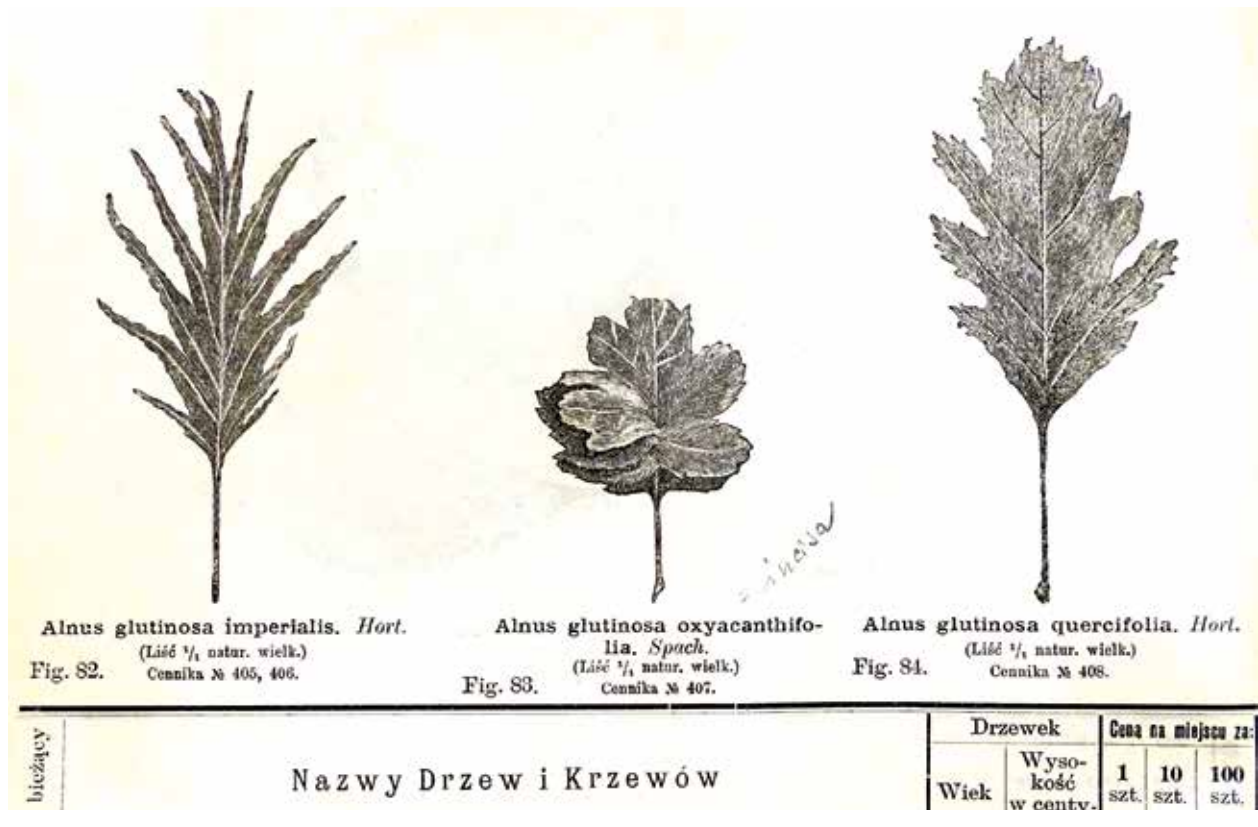


Fig. 4. Three different *Alnus* cultivars, illustrated in the catalogue of Zamoyski Nursery in 1904

Ryc. 4. Trzy kultury olszy w katalogu szkółek Zamoyskiego z 1904 r.

Cultivar epithets – Another problem can occur if identical cultivar epithets do appear in the same “denomination class”. The (early) cultivars in both *A. glutinosa* and *A. incana* may have identical cultivar epithets, such as ‘Laciniata’ (fig. 5) or ‘Aurea’ (fig. 6). This can lead to confusion even

in collections or the nursery trade. Today, a recommendation of the International Code of Nomenclature of Cultivated Plants (ICNCP) restricts the use of naming a cultivar in the same denomination class with the same or a very similar cultivar epithet.



Fig. 5. *Alnus glutinosa* ‘Laciniata’ (left) and *A. incana* ‘Laciniata’ (right), in the centre illustration from Seneta (1987)

Ryc. 5. *Alnus glutinosa* ‘Laciniata’ (po lewej) and *A. incana* ‘Laciniata’ (po prawej), w środku ilustracja za: Seneta (1987)



Fig. 6. *Alnus glutinosa* 'Aurea' (left) and *A. incana* 'Aurea' (right)

Ryc. 6. *Alnus glutinosa* 'Aurea' (po lewej) and *A. incana* 'Aurea' (po prawej)



Forma or cultivar – In *Alnus*, many “formae” are described or at least mentioned (e.g. Callier (1918) describes 52 forms of *Alnus*, while Hylander (1957) published 28 forms of lacinate *Alnus* from Sweden (see, for example, fig. 7 of *A. incana* f. *semipinnata*) – only some of them may be treated as a cultivar in a modern sense. Thus, several of the lacinate-leaved forms described by Hylander and many of the “formae” of Callier are not taken into account in this paper, although one or the other may also be propagated vegetative and thus meet the criteria of a cultivar.

A form usually designates a group with a noticeable morphological deviation and occurs naturally through generative propagation. A cultivar refers to the most basic classification category of cultivated plants in the ICNCP and is usually propagated vegetatively.

If forms of *Alnus* come more or less “reliable” from seed, they will be treated as “formae”. This is, for example, the case in some of the lacinate forms. In the new edition of the “Dendroflora of Finland” (Väre & Kiuru, 2019), they are treated pragmatically, e.g. as *A. glutinosa* f. *laciniata* including ‘Laciniata’. A newly produced seedling of an existing cultivar should, in any case, receive a new cultivar epithet or be declared as an F₁ seedling of this variety.

Fig. 7. *Alnus incana* f. *semipinnata* (Hylander, 1957) is treated as a form and not as a cultivar because it is not propagated vegetatively

Ryc. 7. *Alnus incana* f. *semipinnata* (Hylander, 1957) jest traktowana jako forma, a nie jako kultywar, ponieważ nie jest rozmnażana wegetatywnie

Cultivars of *Alnus* species

A brief description of cultivars of alder is given in alphabetical order.

- *A. acuminata* ‘Royal Cascade’ (syn. ‘Weeping Willy’). Scott Bailey and Javmain Pty Ltd, Australia, 1991.
A selection of *A. acuminata* with a spreading, prostrate weeping habit. First published in “Plant Varieties Journal” (Australia) 2000, vol. 13(4):70; probably not in cultivation in Europe.
- *A. alnobetula* ‘Grandifolia’. Illustrated in Boom (1957, p. 53, fig. 3a) and Koning & Broek (2009).
A form with leaves 6–9 cm long, with 6–10 pairs of nerves. Rare in cultivation. Forms of *Alnus alnifolia* have also been described under the synonymous name *A. viridis*.
- *A. alnobetula* ‘Laciniata’. Schneider (1906, fig. 66f) as f. *laciniata*; Krüssmann (1976) lists it as ‘Laciniata’.
Leaves deeper lobed as the nominal form. Probably not in cultivation.
- *A. alnobetula* ‘Microphylla’. In Schneider (1906) as f. *microphylla*. Krüssmann (1976) lists it as ‘Microphylla’. Illustrated in Schneider (1906, 1: tab. 31, fig. k).
Leaves rounded and only half the size of the nominal form. Probably not in cultivation.
- *A. alnobetula* “Weeping Form” (this plant does not have a cultivar name yet).
In 2019, the author observed a weeping or pendulous form of this species in the Botanical Garden in Wrocław. It has an elegant habit and could be an interesting shrubby *Alnus* for small gardens and is recommended for propagation (fig. 8).
- *A. cordata* ‘Purpurea’. Kórnik Arboretum, Poland, 1927.
New growth purplish brown (Seneta, 1991). Probably not any longer in cultivation.
- *A. ×elliptica* ‘Itolanda’ (*A. cordata* × *A. glutinosa*). Doorenbos, the Netherlands, c. 1935, illustrated in Boom (1957, p. 53, fig. 3b).
Found by S. G. A. Doorenbos as a chance seedling around 1935. Vigorous growth, large leaves; perhaps no longer in cultivation, because of its susceptibility to the bacteria disease caused by *Xylella fastidiosa* (an aerobic, Gram-negative bacteria). The epithet derives from the native range of the parent species, i.e. “Italia” and “Olanda” (=Holland).
- *A. glutinosa* ‘Angustiloba’. Hylander (1957).
With deeper lobed leaves than ‘Laciniata’, illustrated by Hylander (1957, plate 3), also listed by Krüssmann (1976). It is one of the many lacinate forms of Scandinavian alder, propagated vegetatively and thus matches the criteria for a cultivar.



Fig. 8. A weeping form of *Alnus alnobetula* in the Botanical Garden in Wrocław (2019), not named yet but perhaps worthwhile?

Ryc. 8. Odmiana płacząca *Alnus alnobetula* w Ogrodzie Botanicznym we Wrocławiu (2019), bez nazwy jeszcze, ale może warto ją formalnie opisać?

- *A. glutinosa* 'Aurea'. Vervaene, Belgium, ca. 1860.

Leaves are pale yellow, later turning warm golden yellow, noticeable in spring and early summer (fig. 9). The growth is more compact than in the species. It received a RHS First Class Certificate (FCC) in 1867.

- *A. glutinosa* 'Carelica'. Also as var. *carelica*; Scandinavian selection; and as 'Muhkura' or 'Mukura'.

The wood has curled grain, called "visa" formation in Finnish. In vitro propagation, as it practiced in Finland, seems to lead to better results than grafts, which sometimes lose the special character of the curled grain.

- *A. glutinosa* 'Cascade'. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

A vigorous, more or less pendulous form; the only weeping *A. glutinosa* in cultivation (fig. 10). It is a result of a breeding programme aimed at improving ornamental *Alnus* led by J. Labanc. Several selections of alder have been named in this programme.

- *A. glutinosa* 'CharlesHowlett'. Registered in 1986 by D. M. Howlett, Winchester, England, selected in 1982; its origin is unknown.

Variouly shaped and variegated leaves, yellow to orange streaked bark. It is slightly less vigorous than the ordinary *A. glutinosa*. A fairly new selection, but not widely cultivated.

- *A. glutinosa* 'Corticiformis'. Poland, known before 1960 (Seneta, 1991).

On the trunk, this alder forms elongated, almost vertical or slightly axially twisted protruding strips. It is known from several natural stands in Poland and has been in cultivation; however, an account from 1960 lacks a formal description (Seneta, 1991). Whether this form can be counted as a cultivar is subject to discussion, but if it was (or still is) in cultivation and vegetatively propagated, it matches the criteria of ICNCP.

- *A. glutinosa* 'Crispa'. Hesse Nursery, Weener, Germany, before 1925 (Seneta, 1991).

Medium-sized tree with ruffled leaves. In Kórnik, Poland, two trees were growing, obtained from Hesse, Germany, and planted in 1925. Not known if still in cultivation.



Fig. 9. *Alnus glutinosa* 'Aurea' exhibits sun tolerance
Ryc. 9. *Alnus glutinosa* 'Aurea' wykazuje tolerancję na poparzenia słoneczne



Fig. 10. *Alnus glutinosa* 'Cascade' in the Arboretum Borová Hora in Zvolen, Slovakia
(photo I. Sarvašová)

Ryc. 10. *Alnus glutinosa* 'Cascade' w Arboretum Borová Hora w Zwoleńiu na Słowacji
(fot. I. Sarvašová)

- *A. glutinosa* ‘Drucourt’. France, before 2015.

Leaves remarkably variegated, green with large white spots. Not yet named as a cultivar, it originates from Arboretum Drucourt, Eure, Normandy (France), and will get a cultivar name if successfully propagated (fig. 11).



Fig. 11. *Alnus glutinosa* ‘Drucourt’, a variegated form, the name is only a placeholder name (photo O. van Sante)

Ryc. 11. *Alnus glutinosa* ‘Drucourt’, odmiana o pstrych liściach; nazwa robocza (fot. O. van Sante)

- *A. glutinosa* ‘Floribunda’. Poland, 1972 (Seneta, 1991).

A floriferous selection, found in Jaworzna-Szczakowa, Poland, in 1972. Female inflorescences and fruit clusters in umbel-like stands, significantly more numerous than in the species, with the fruit cones significantly larger. It was described in 1972 but without Latin diagnosis (Seneta, 1991). Since the use of latinised cultivar epithets has not been permitted after 1959, this name must be rejected. If the cultivar is still in cultivation, it must be given a new, valid name.

- *A. glutinosa* ‘Greenwood’. Seedling selected by J. Mauritz in Opeusden, the Netherlands, before 2001, marke-

ted by Van Aart Boomkwekerijen from Oudenbosch in 2004, propagated by Hulsdonk Nursery in the Netherlands, and presented to the public as one of the novelties at the fair GrootGroenPlus in 2014 (“*Alnus glutinosa* with twisted branches”, 2019).

Upright tree with twisting branches (fig. 12). At a later age, the main stem grows straight upwards, forming an upright tree. Free flowering. The name derives from the address of Van Aart Nursery in Oudenbosch, Groene Woud, which means “Greenwood” in English.



Fig. 12. *Alnus glutinosa* ‘Greenwood’ is a recent contorted selection

Ryc. 12. *Alnus glutinosa* ‘Greenwood’ to niedawno otrzymana odmiana o skręconych pędach

- *A. glutinosa* ‘Imperialis’. Seedling selected by Brossart of Alençon in France, ca. 1855; in cultivation in Orléans since 1858. Published with illustration by Lemaire and Verschaffelt (1859) as “*A. glutinosa* var. *imperialis aspleniifolia*” (fig. 13).



Fig. 13. Verschaffelt illustrated this beautiful selection in 1859 as *Alnus Imperialis aspleniifolia* (left), *A. glutinosa* ‘Imperialis’ (right)

Ryc. 13. Verschaffelt przedstawił tę piękną odmianę w 1859 jako *Alnus Imperialis aspleniifolia* (po lewej), *A. glutinosa* ‘Imperialis’ (po prawej)

Slow-growing and unusual, slender small tree with filigree-like, deeply cut, sea-green leaves, the most elegant of the laciniate alders; rated with one star in a Dutch trial (Grootendorst, 1972), and received the RHS Award of Merit in 1973.

- *A. glutinosa* ‘Incisa’ (syn. ‘Oxyacanthifolia’?), Loudon (1844).

Small rounded leaves, less than 3 cm, deeply cut into toothed lobes (fig. 14). Bean (1970, p. 776) and Krüssmann (1976) described it as a slow growing, shrubby variety. According to Bean (1970), the tree-like forms may indeed belong to ‘Oxyacanthifolia’, which is treated as a synonym for the cultivar. More research is needed with material from both shrubby and tree-like specimen to verify if they belong to the same clone.



Fig. 14. *Alnus glutinosa* ‘Incisa’ has been known at least since 1844

Ryc. 14. Odmiana *Alnus glutinosa* ‘Incisa’ znana jest przynajmniej od 1844 r.

- *A. glutinosa* ‘Laciniata’. Ehrhardt (1788); described by Du Roi in 1795 from Germany (as *Betula* [*Alnus laciniata*] *foliis pinnatifidis*), pre-1807 in Sweden (Thunberg, 1807, fig. 2); and in 1819 in Paris, from where it was distributed in Western Europe under that name.

Slower growing than the species, with laciniate leaves, but not so deeply and narrowly lobed as in ‘Imperialis’, the lobes not toothed. Rated in a Dutch trial as a tree of recommendation, two stars (Grootendorst, 1972).

- *A. glutinosa* ‘Lobulata’. Finland, 1885 (Krüssmann, 1976).

Leaves roundish, deeply lobed. Illustration in Krüssmann (1976, p. 141, fig. 98).

- *A. glutinosa* ‘Luszyn’. Szmit Nursery, Ciechanów, Poland, 2016.

Upright, very regular, columnar crown, wider than ‘Pyramidalis’. Young trees with roundish crown, later they proceed with an upright growth (fig. 15). *Alnus glutinosa* ‘Luszyn’ was found in a park in the town of Luszyn near

Płock in central Poland by the eminent Polish dendrologist Włodzimierz Seneta and named by him incorrectly as ‘Pyramidalis’ (a clone already named in 1880). Introduced and renamed by Szmit Nursery.

- *A. glutinosa* ‘Pyramidalis’ (syn. *A. g.* ‘Fastigiata’). Germany, 1880, as “*pyramidalis Birkiana*” Späth (1930).

Narrow, fastigiated growth, erect branches; leaves dark green and broader than those of the species (fig. 16). Perhaps different clones are in cultivation; more observation is needed.

- *A. glutinosa* ‘Maculata’. Krüssmann (1976).

Leaves with white speckles. No further information is available, and it is possible that this cultivar is no longer in cultivation. It is not unclear whether the selection was named before 1959, if not, it must be renamed according to ICNCP.

- *A. glutinosa* ‘Minutifolia’. Finland (Åland), 1889 (Krüssmann, 1976).

Shrubby, up to 4 m, leaves round, 1.5–2.5 cm long, with a notched margin. Illustration in Krüssmann (1976, p. 141, fig. 98). Possibly not in cultivation.



Fig. 15. *Alnus glutinosa* ‘Luszyn’ (photo B. Szmit)

Ryc. 15. *Alnus glutinosa* ‘Luszyn’ (fot. B. Szmit)



Fig. 16. *Alnus glutinosa* 'Pyramidalis' in the Botanical Garden Helsinki, Finland

Ryc. 16. *Alnus glutinosa* 'Pyramidalis' w Ogrodzie Botanicznym w Helsinkach

- *A. glutinosa* 'Quercifolia'. Gleditsch (1787); Willdenow (1796).

Upper half of the leaves with 3–4 lobes on both sides, not deeper than a third of the leaf blade. Gleditsch (1787) illustrated this beautiful *Alnus* (fig. 17).



Fig. 17. *Alnus glutinosa* 'Quercifolia' is another of the historical cultivars

Ryc. 17. *Alnus glutinosa* 'Quercifolia' to kolejna historyczna odmiana

- *A. glutinosa* 'Rubrinervia'. Found around 1870 in Silesia (Dippel, 1892).

Leaves, veins and stalks red when young, later leaves dark green (fig. 18). It was thought that this cultivar had been lost in cultivation, but thanks to Szmit Nursery, it was rediscovered in the Kórnik Arboretum. Vigorous; very rare in cultivation.



Fig. 18. *Alnus glutinosa* 'Rubrinervia' is extremely rare and was believed to be lost in cultivation, but found back in the Kórnik Arboretum

Ryc. 18. *Alnus glutinosa* 'Rubrinervia' to niezwykle rzadki kultywar; uważany za zaginiony, ale odnaleziony w Arboretum w Kórniku

- *A. glutinosa* 'Sääksmäki'. Finland, ca. 2004.
Selected for its narrow, fastigate growth. Found in Sääksmäki in western Finland.
- *A. glutinosa* 'Sakari'. Sakari Saarnijoki, Metla, Finland, before 1990.
Selected for its narrow, fastigate growth by Professor Sakari Saarnijoki from the Finnish Forest Research Institute (Metla) in Kotka, Finland. 15 × 2–3 m; the most popular tree in narrow streets in Helsinki (fig. 19), often planted in Scandinavia.
- *A. glutinosa* 'Sorbifolia'. Schneider (1906); illustration also in Boom (1949).
Small tree of shrubby habit; leaves elliptic, deeply cut with 5–6 lobes, sinuses often widest at the base. According to Bean (1970), one of the most distinct of the cut-leaved forms. Probably not any longer in cultivation.
- *A. glutinosa* 'Thillie Trompenburg'. Selected and named by Gert Fortgens, former director of Arboretum Trompenburg, Rotterdam, 2018 (fig. 20).
Fastigate form with yellow leaves and upright pyramidal growth.
- *A. hirsuta* 'Harbin' (Prairie Horizon). Selected by the North Dakota State University breeding programme, ca. 2000. US and Canadian trademark registered.
It has proven to be the most drought-tolerant *Alnus* in their trials. The selection is a fast growing, medium-sized



Fig. 19. *Alnus glutinosa* 'Sakari' is a very popular upright cultivar from Finland and often planted there (photo J. Särkkä)

Ryc. 19. *Alnus glutinosa* 'Sakari' to bardzo popularny kultywar o kolumnowym pokroju, pochodzi z Finlandii, gdzie jest często uprawiany (fot. J. Särkkä)



Fig. 20. *Alnus glutinosa* 'Thillie Trompenburg' is a new introduction from Arboretum Trompenburg, Rotterdam (the Netherlands; photo G. Fortgens)

Ryc. 20. *Alnus glutinosa* 'Thillie Trompenburg' to nowa odmiana z Arboretum Trompenburg w Rotterdamie (fot. G. Fortgens)

tree with dark green leaves in summer that turn a rich golden-yellow in autumn. The bark is particularly striking: smooth, pearl-grey, and resembling a beech.

- *A. incana* 'Angustissima'. Scandinavia, before 1870.

The most elegant lacinate form of all alders, propagated *in vitro* in Finland. Leaves finely dissected (fig. 21). Widely cultivated in Scandinavia; nearly unknown in Western and Central Europe.

- *A. incana* 'Aurea'. Dippel (1892).

Elegant tree with yellow leaves and young shoots, catkins conspicuously red-tinted (fig. 22). It is more frequently planted than *Alnus glutinosa* 'Aurea', but still rare in cultivation. Similar to 'Ramulis Coccineis', which differs in leaves being almost glabrous beneath. Rated in a Dutch trial as a tree of some interest: one star (Grootendorst, 1972). It has also been awarded the Royal Horticultural Society's Award of Garden Merit (RHS, 2019).



Fig. 21. *Alnus incana* 'Angustissima' is an old and most elegant cultivar from Scandinavia and propagated there today *in vitro*, but unknown outside the region

Ryc. 21. *Alnus incana* 'Angustissima' to stara i najbardziej elegancka odmiana pochodząca ze Skandynawii, obecnie rozmnażana *in vitro*, nieznaną poza tym regionem



Fig. 22. *Alnus incana* 'Aurea' has very distinguished red catkins (photo B. Szmit)

Ryc. 22. *Alnus incana* 'Aurea' ma charakterystyczne czerwone kotki (fot. B. Szmit)

- *A. incana* ‘Elegant’. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

Elegant, slightly weeping tree with lacinate leaves (fig. 23). It is rare, but deserves wider cultivation. It is a result of a breeding programme aimed at improving ornamental *Alnus* led by Juraj Labanc.

- *A. incana* ‘Foliis Aureomarginatis’. In: “Cennik ilustrowany drzew i krzewów leśnych, parkowych i owocowych szkółek hr. Andrzeja Zamoyskiego w Podzamczu” [Illustrated price list of forest, park, and fruit trees and shrubs from Count Andrzej Zamoyski’s nursery in Podzamcze] from 1913, Poland.

Leaves with stable yellow variegation, growth slightly smaller than species (fig. 24). Similar to ‘Razzmatazz’ but leaves more glossy and with stable variegation. Listed in the catalogue of the Zamoyski Nursery in 1913; recently rediscovered in the Kórnik Arboretum, Poland, after years of “extinction”.

- *A. incana* “Fruticosa Aurea”. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc. Nomen illegitimum.

A shrubby multi-stemmed tree with golden leaves and reddish catkins, a result of a breeding programme aimed at improving ornamental *Alnus* led by J. Labanc (fig. 25). The latinised cultivar epithet is illegitimate, thus this selection must be renamed.



Fig. 23. *Alnus incana* ‘Elegant’ – a recent introduction from Arboretum Borová Hora, Zvolen, Slovakia (photo I. Sarvašová)

Ryc. 23. *Alnus incana* ‘Elegant’ – kultywar niedawno otrzymany w Arboretum Borová Hora (Zwoleń, Słowacja) (fot. I. Sarvašová)



Fig. 24. *Alnus incana* ‘Foliis Aureomarginatis’ is an introduction of Zamoyski Nursery around 1913, believed to be lost in cultivation but recently rediscovered in the Kórnik Arboretum

Ryc. 24. *Alnus incana* ‘Foliis Aureomarginatis’ została wyprowadzona w szkółkach Zamoyskiego około 1913 r., uważana za zaginioną, ale niedawno odnaleziona w Arboretum w Kórniku



Fig. 25. *Alnus incana* “Fruticosa Aurea” – a beautiful slow growing golden selection from Arboretum Borová Hora (Zvolen, Slovakia) with an invalid name (photo I. Sarvašová)

Ryc. 25. *Alnus incana* “Fruticosa Aurea” to piękna odmiana o powolnym wzroście, powstała w Arboretum Borová Hora w Zwoleńiu, nazwa nieuprawniona (fot. I. Sarvašová)

- *A. incana* ‘Gibberosa’. Finnish selection, also treated as forma “Carelica” or as “Visa” form.

A special form of *A. incana*, valued for the decorative pattern of its wood. Stem with remarkable bulging knobs. Difficult to propagate (*in vitro*). It is probably the same clone as ‘Mukhura’. This selection was also illustrated on the front-cover of the journal of the Finnish Dendrological Society: “Sorbifolia” 49 (2018) (fig. 26).

- *A. incana* ‘Gold Cascade’. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

A small tree with golden leaves and prominent reddish buds and catkins, and of pendulous habit (fig. 27). A result of a breeding programme aimed at improving ornamental *Alnus* led by J. Labanc.

- *A. incana* ‘Gold Fountain’. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

A small tree with golden leaves, prominent reddish buds and catkins, and of pendulous habit (fig. 28). It seems to grow more upright and compact than ‘Gold Cascade’.

- *A. incana* ‘Green Fountain’. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

A vigorous tree of pendulous but upright habit and green leaves (fig. 29). A result of a breeding programme mentioned above.



Fig. 27. *Alnus incana* ‘Gold Cascade’ (photo I. Sarvašová)
Ryc. 27. *Alnus incana* ‘Gold Cascade’ (fot. I. Sarvašová)

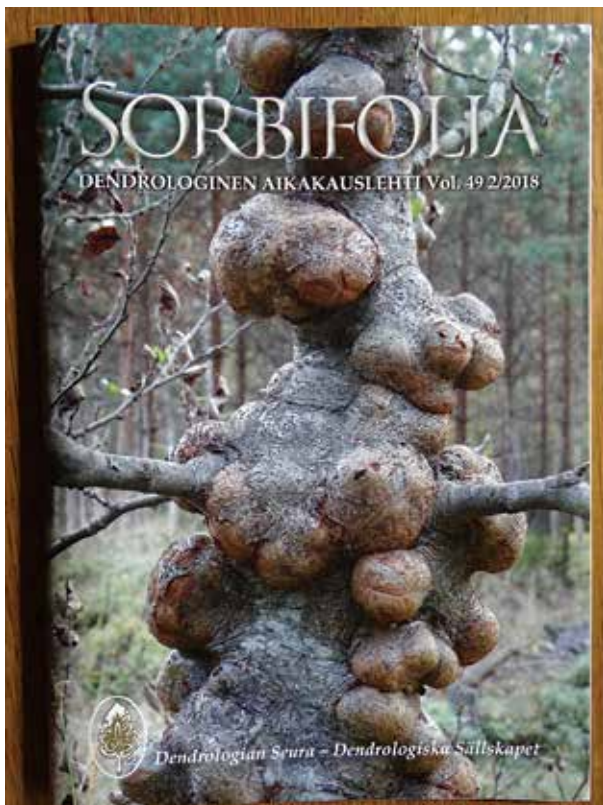


Fig. 26. *Alnus incana* ‘Gibberosa’ was illustrated on the cover of “Sorbifolia”, the magazine of the Finnish Dendrology Society

Ryc. 26. *Alnus incana* ‘Gibberosa’ na okładce czasopisma Fińskiego Towarzystwa Dendrologicznego „Sorbifolia”



Fig. 28. *Alnus incana* ‘Gold Fountain’ (photo I. Sarvašová)
Ryc. 28. *Alnus incana* ‘Gold Fountain’ (fot. I. Sarvašová)



Fig. 29. Another introduction from Arboretum Borová Hora, Zvolen, Slovakia: *Alnus incana* 'Green Fountain' (photo I. Sarvašová)

Ryc. 29. Kolejny kultuwar z Arboretum Borová Hora w Zwoleniu: *Alnus incana* 'Green Fountain' (fot. I. Sarvašová)

- *A. incana* 'Johanna'. Tyllilä Taimityllilä Oy, Finland, before 2008.

A seedling of 'Laciniata', with deeply laciniate leaves and slower growth rate. Easier to propagate *in vitro* than 'Laciniata'.



Fig. 31. *Alnus incana* 'Monstrosa' is extremely rare in cultivation; thought to be extinct, it was rediscovered in the Kórnik Arboretum (photo B. Szmit).

Ryc. 31. *Alnus incana* 'Monstrosa' jest niezwykle rzadko uprawianą odmianą; uważana za zaginioną, odnaleziona w Arboretum w Kórniku (fot. B. Szmit).

- *A. incana* 'Laciniata' (syn. 'Acuminata', 'Pinnata'). Before 1860, FCC in 1873.

A deeply cut-leaved alder with 6–8 pairs of narrow lobes (fig. 30). Similar laciniate forms have been found in the wild in Scandinavia and referred to as f. *laciniata* (e.g. Hylander, 1957). *A. i.* 'Laciniata' received a First Class Certificate (FCC) of the RHS, England, in 1873. Perhaps several clones with the same cultivar epithet are in cultivation. It is recommended to form an *A. incana* Cut Leaf Group and group the different clones of the laciniate *A. incana* here ('Acuminata' from Seneta (1987) surely belongs here).

- *A. incana* 'Monstrosa'. Späth, Berlin, 1892.

Shrubby habit, with fasciated shoots, and elongated leaves (fig. 31). It is a short-lived plant when grafted as a standard; it should be grafted deep on the rootstock and best planted with the graft below the surface. This selection is listed and described in the catalogue of Zamoyski Nursery in 1913. Thought to be extinct, the plant was rediscovered in Kórnik. Very rare in cultivation.



Fig. 30. Old cultivar *A. incana* 'Laciniata' (photo B. Szmit)

Ryc. 30. Stara odmiana *Alnus incana* 'Laciniata' (fot. B. Szmit)



- *A. incana* ‘Mukhura’. Finnish selection, also treated as forma “Carelica” or as “Visa” form.
Difficult propagation (*in vitro*), it is probably the same clone as ‘Gibberosa’ (see there).
- *A. incana* ‘Orbicularis’. Found in Zielona Góra (formerly Grünberg), Silesia, in 1892, mentioned and illustrated in 1918 (Callier), and still listed in Krüssmann (1976). Leaves round, 3–4 cm, tomentose on both sides when young; prominent nerves on adaxial side. Krüssmann (1976) treated it as a cultivar, but it is not clear whether it was ever in cultivation and may simply be a form. It is not known whether this selection is still in cultivation.
- *A. incana* ‘Pendula’. van der Bom, the Netherlands, pre-1890.
Elegant tree with weeping branches. In the catalogue of Zamoyski Nursery in 1904–1905 (fig. 32), a tree is illustrated and described as var. *pendula nova*. It is possibly the form

that is today in cultivation under the name ‘Pendula’, but it could also be a more elegant smaller form that may be lost in cultivation today.

- *A. incana* ‘Pinnata’. Sweden, Lundmark (1790).
A small tree, with small, deeply cut leaves 2–3 cm long. This Scandinavian variety is cultivated only in botanical collections and is widely unknown in Western and Central Europe. It was listed and illustrated by Schneider (1906) and Krüssmann (1976) (fig. 33). The seedlings, which may come more or less true, have to be named f. *pinnata*.
- *A. incana* ‘Ramulis Coccineis’
Medium-sized tree, foliage and young shoots vivid yellow; catkins orange-red like ‘Aurea’ (fig. 34). According to Armitage et al. (2014): “A tree which does not appear to differ in any way from ‘Aurea’”. It seems to be a different cultivar because the leaves are almost glabrous beneath and tomentose in *A. incana* ‘Aurea’, which is also Bean’s opinion (1970).

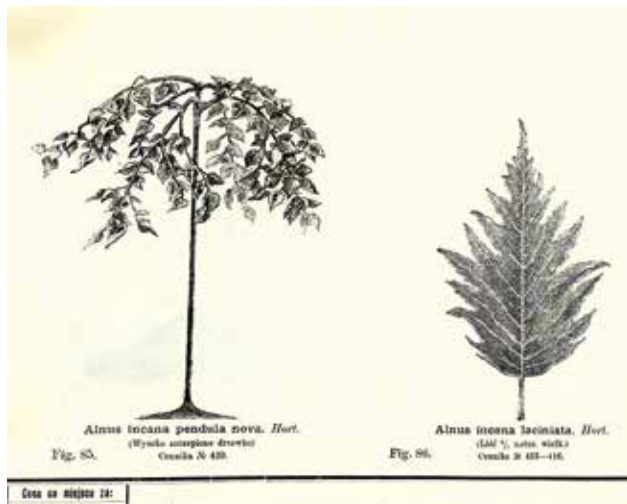


Fig. 32. *Alnus incana* ‘Pendula’ was illustrated as *A. incana* ‘Pendula Nova’ in the 1904–1905 catalogue of Zamoyski Nursery. The tree on the right is growing in Turku Botanical Garden, Finland, where they cultivate a great number of *Alnus* cultivars (photo S. Laine)

Ryc. 32. *Alnus incana* ‘Pendula’ jako *A. incana* ‘Pendula Nova’ w katalogu szkółek Zamoyskiego z 1904–1905 r. Drzewo po prawej rośnie w Ogrodzie Botanicznym w Turku (Finlandia), gdzie uprawia się wiele odmian olszy (fot. S. Laine)



Fig. 33. *Alnus incana* ‘Pinnata’ is frequently seen in Scandinavian collections as here, in the Botanic Garden of Uppsala, Sweden.

Unknown outside Scandinavia (photo B. Szmit)

Ryc. 33. *Alnus incana* ‘Pinnata’ często występuje w skandynawskich kolekcjach, jak tutaj, w Ogrodzie Botanicznym w Uppsali (Szwecja). Nieznana poza Skandynawią (fot. B. Szmit)



Fig. 34. *Alnus incana* ‘Ramulis Coccineis’ is probably a different clone as ‘Aurea’ according to Bean (1970)

Ryc. 34. *Alnus incana* ‘Ramulis Coccineis’ prawdopodobnie jest innym klonem niż ‘Aurea’, według Beana (1970)

- *A. incana* 'Razzmatazz'. USA, pre-2000.

A grey alder with variegated leaves (bright yellow irregular margin), similar to *A. i.* 'Foliis Aureomarginatis' but not stable (reverting) and fading out in late summer. It is often mislabelled as a cultivar of *A. glutinosa*. This new cultivar is frequently found in the trade but is not superior to 'Foliis Aureomarginatis'.

- *A. incana* 'Rubra'. Finland, before 1992.

Small tree with dark red young leaves which turn to red-dish-brown-green in summer (fig. 35). Treated either as forma or as cultivar, propagated *in vitro* in Finland and planted frequently as an ornamental. If treated as a cultivar (which it should be if propagated vegetatively), it must receive a new valid cultivar epithet according to ICNCP. It is not known if plants of this quite beautiful cultivar exist outside Scandinavia.



Fig. 35. *Alnus incana* 'Rubra' is a beautiful dark red leaf form, found in the North of Finland. It is propagated *in vitro*, but in more southern latitudes (south of Helsinki) it fails in cultivation. The name might be invalid if given after 1959 (photo S. Laine)

Ryc. 35. *Alnus incana* 'Rubra' to piękna odmiana o ciemnoczerwonych liściach, znaleziona na północy Finlandii. Jest rozmnażana metodą *in vitro*, ale w niższych szerokościach geograficznych (na południe od Helsinek) się nie udaje. Nazwa może być nieuprawniona, jeśli została nadana po 1959 r. (fot. S. Laine)



Fig. 36. *Alnus incana* 'Tabulaeformis' is a horizontal growing selection; here in the Botanic Garden in Turku, Finland. The name might be invalid if given after 1959 (photo S. Laine)

Ryc. 36. *Alnus incana* 'Tabulaeformis' cechuje się poziomym wzrostem, ten okaz rośnie w Ogrodzie Botanicznym w Turku (Finlandia). Nazwa może być nieuprawniona, jeśli została nadana po 1959 r. (fot. S. Laine)

- *A. incana* 'Tabulaeformis'. Finland.

A small tree with nearly horizontal pendulous growth, cultivated in a few botanical collections in Finland; widely unknown (fig. 36). It is not known if this cultivar was named before 1959; if later, the cultivar epithet is illegitimate, and the selection needs a new name. It could make a beautiful addition to the nursery assortment.

- *A. incana* 'Variegata'. Known since 1902 (Seneta, 1991). Medium-sized tree with white-green variegated leaves. No further description, and not known, if still in cultivation.

- *A. incana* 'Varjo'. Selection from Finland before 2015 (Väre & Kiuru, 2019).

A small tree with wide horizontal growth, 3–4 × 8–10 m, widely unknown outside Finland.

- *A. incana* 'Wonderful Fountain'. Arboretum Borová Hora, Zvolen, Slovakia, before 1998, named by Juraj Labanc.

This elegant small tree with pendulous but upright habit and lacinate leaves (fig. 37) deserves more attention. It is a result of a breeding program aimed at improving ornamental *Alnus* led by J. Labanc.



Fig. 37. *Alnus incana* 'Wonderful Fountain'. Arboretum Borová Hora, Zvolen, Slovakia (photo I. Sarvašová)

Ryc. 37. *Alnus incana* 'Wonderful Fountain'. Arboretum Borová Hora w Zwoleniu (fot. I. Sarvašová)



Fig. 38. *Alnus incana* subsp. *rugosa* 'Tomophylla' was described from Canada in 1911 and found in the wild; it is in cultivation there and thus it is correct to name it with a cultivar epithet (Courtesy of the Gray Herbarium of Harvard University; <http://data.huh.harvard.edu/3be336a7-26c0-475f-bc4c-b7532fddfa03>)

Ryc. 38. *Alnus incana* subsp. *rugosa* 'Tomophylla' opisano z natury w Kanadzie w 1911 r.; jest tam uprawiany; można używać w stosunku niego epitetu kultury (Gray Herbarium of Harvard University; <http://data.huh.harvard.edu/3be336a7-26c0-475f-bc4c-b7532fddfa03>)

- *A. incana* subsp. *rugosa* 'Tomophylla'. Canada, 1911.
A Canadian selection with lacinate leaves, found in the wild, but cultivated in a few collections (fig. 38). If found in the wild, it should be treated as var. *tomophylla*. In cultivation in Canada and USA since around 1930. Unknown in Europe.
- *A. japonica* 'Purpurea'. Poland, 1927 (Browicz & Bugała 1958; Seneta, 1991).
Differs from the species in the brown-purple colouring of the youngest leaves in the long shoots throughout the vegetation period. Selected from a batch of seedlings, from the seeds collected in the Botanical Garden Edinburgh by A. Wróblewski, Kórnik, Poland. Described by Browicz and Bugała (1958) from the Kórnik Arboretum. According to a herbarium sheet dating from 1976, it was at least until that date in cultivation there (Seneta, 1991).

- *A. maritima* 'September Sun'. W. A. Graves, Dept. of Horticulture, Iowa State University, USA, 2002.
Differing from the typical species by its faster growth rate, dense canopy, and uniform habit of multiple trunks that form an upright-oval shape. Flowering in autumn. The name 'September Sun' refers to yellow catkins that are produced in September. It was selected in 1999 out of a batch of seedlings of *Alnus maritima* subsp. *oklahomensis* (Graves & Schrader, 2004).

- *A. rubra* 'Pinnatisecta'. USA, before 1920.
Medium-sized tree, with lacinate leaves, which are deeply cut with 5–7 lobes (fig. 39). It occurs also in the wild with more or less lacinate leaves. This cultivar is a named clone of f. *pinnatisecta*, which comes more or less reliable from seed. If propagated by seed, it should not be given the cultivar name.
- *A. serrulata* 'Panbowl'. USDA-NRCS Appalachian Plant Materials Center, Alderson, WV, 2002.
The original plant was collected at Panbowl Lake in Jackson, Breathitt County, Kentucky. The cultivar produces numerous flexible stems and fibrous roots and is longer living than the typical species. It is propagated by cuttings.



Fig. 39. *Alnus rubra* 'Pinnatisecta', an American selection which comes also reliable from seed (and should be treated in these cases as forma)

Ryc. 39. *Alnus rubra* 'Pinnatisecta', amerykański kultywar, który powtarza cechy również z nasion (i w takich przypadkach powinien być traktowany jako forma)

- *A.* 'Sipkes'. Introduced in 1968; found ca. 1965 by C. Sipkes in the "Russenduin" in Bergen aan Zee, the Netherlands.

Tree, uniformly upright growth with an ovate crown, 20 m (Laar, 1988). Thought to be a hybrid of *A. cordata* × *A. incana* and thus named *A.* 'Cordinca' or *A.* ×*cordinca* (1968), but the name was later rejected, and now in cultivation under *A.* ×*cordinca* 'Sipkes' (1978).

- *A.* ×*spaethii* 'Spaeth' (*Alnus japonica* × *A. subcordata*). Späth Nursery, Berlin, 1894, illustration in Späth 1930 (fig. 40).

Fast-growing tree of medium size, with a uniform upright growth and ovate crown. The large leaves are remarkable purplish when young. Large and remarkable flowers (catkins). Attractive as a street tree for the long-lasting winter interest it provides. Very hardy. This hybrid of *A. japonica* × *A. subcordata* was found at Späth nursery, Berlin. To avoid conflict with seedlings of the same parentage, the vegetative propagated clone was named 'Spaeth' and should be mentioned in publications (including catalogues) in this way. According to the Street Tree List of German cities (GALK, 2019), it is rated as an excellent street tree, which can also grow on dryer sites. It was rated in a Dutch trial as outstanding tree, three stars (Grootendorst, 1972).

- *A. subcordata* 'Oberon'. Doorenbos, Den Haag, the Netherlands, c. 1955.

Medium-sized tree with a small, conical crown. As it grows quicker when young, nurseries prefer it to the species. Suitable as a street tree.

Conclusions and thoughts

Alnus cultivars are part of the horticultural and cultural heritage, with some of them having a long history, also in nurseries and collections in Poland. The pick of collections



Fig. 40. A flowering branch of *Alnus* ×*spaethii* 'Spaeth' was illustrated in the Späth Nursery yearbook in 1930; the original tree in Berlin is still alive

Ryc. 40. Kwitnąca gałąź *Alnus* ×*spaethii* 'Spaeth' została przedstawiona w katalogu szkółki Spätha w 1930 r.; pierwotne drzewo nadal rośnie w Berlinie

focusing on alder has long passed, and today, decades later, the situation has not much improved. There are only a few *Alnus* cultivars, which are planted frequently, such as *A.* ×*spaethii* 'Spaeth' and *A. glutinosa* 'Pyramidalis'.

Alders are not a primary focus for landscape architects or horticulturists. Not much promotion for this group of trees is done either. In recent dendrological reference books, only very few *Alnus* cultivars are listed, and awareness of the beauty of these cultivars is fading out slowly.

Only very few nurseries still offer a good range of *Alnus* and its cultivars, such as Szmit Nursery in Pęchcin, Poland. Similarly, there are only a few collections of *Alnus* cultivars, aside from those in the Botanical Gardens of Helsinki and Turku in Finland, or Zvolen in Slovakia. These collections serve as a kind of a "Plant Ark" for these cultivars today, saving part of the biodiversity of cultivated plants.

Increased promotion may help save some of the very beautiful cultivars in this group. New breeds could lead to a wider appreciation, especially when selecting robust and healthy clones meeting modern criteria for landscape use or urban plantings. If such clones become available, the demand for alders may hopefully increase. Currently, there is only one recent breeding programme dedicated to improving *Alnus* cultivars at the Arboretum Zvolen, Slovakia.

Alnus incana is rated as a "future tree" or "climate tree" in Germany (Gillner et al., 2009). *Alnus* with small crowns or fastigiated growth are in cultivation but not widely used, except in Scandinavia.

It is hoped that the awareness of the importance of saving *Alnus* cultivars (along with those of other genera) will increase, and preserving this horticultural heritage for future generations lead to save this horticultural heritage.

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