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# 'Prince Albert', the Zátópek of red currants

Pascal Kissling

With the editorial collaboration of Jitka Kissling, Alenor Conservatory Garden, Záblatí (CZ)

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## Abstract

Biometric and horticultural description of the oldest and most common cultivar of *Ribes x pallidum* O. & D. A cultivar which was the main source of genome from *Ribes petraeum* in further breeding of red currants.

*To Laurence, marathon runner*

*A marathon runner in its slowness at the start and then the longevity of its branches, its lateness and its resistance in the face of any hardship, ungainly in its growth habit, decent in its regular productivity, pleasant in its relative sweetness, and even if its records were beaten, it remains one of the best, a source of inspiration for newcomers and still going strong after three centuries: like Emil Zátopek.*



On the kind invitation of Petr Dostálek (<https://www.gengel.cz>) we are starting a series on red currants and we wish to thank Mrs. Vohralíková, editor, for including it in the journal "Biočasopis". The introduction to 'Gabreta' (Biočasopis 2015.2) was an unintended preview. This number will be longer than the following ones because it describes one of the most important cultivars in the history of red currants - Honour where honour's due - and introduces elements that will refer to later.

## Identifying 'Prince Albert'

In order to understand a cultivated red currant it is a good idea to ask oneself which wild species it resembles. For this European veteran, it is enough to consider the three wild species that grow north of the Alps – a fourth one, the Mediterranean *Ribes multiflorum*, only arrived in the 20th century. The cultivated red currants of Europe and North America are essentially a fruit of European origin. If we were in Russia or in eastern Asia, the cultivars and parental species concerned would be different (see the excellent pomology of the Czech Academy of Sciences, BLATTNÝ et al. 1971).

## From wild *Ribes petraeum* it has...



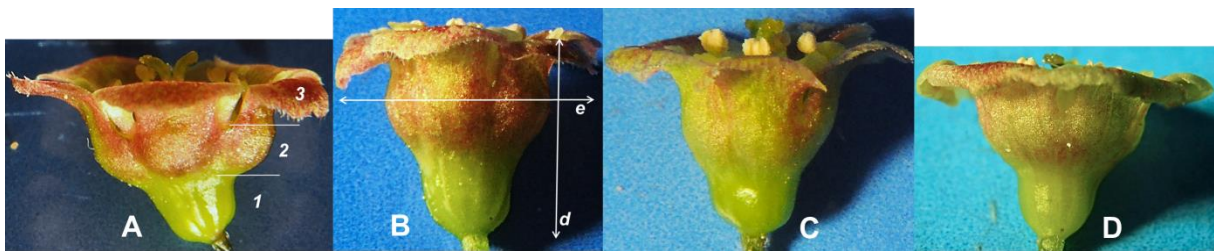
'Prince Albert' with its strong branches spreading outwards.  
To the left of it, the upright habit of a 'Gabreta'

– the **wide, robust habit**: the branches are thicker than in *Ribes rubrum*, they divide freely and the branches often spread out horizontally before turning upwards at the ends. This results in a rigid bush that is as wide as it is tall.

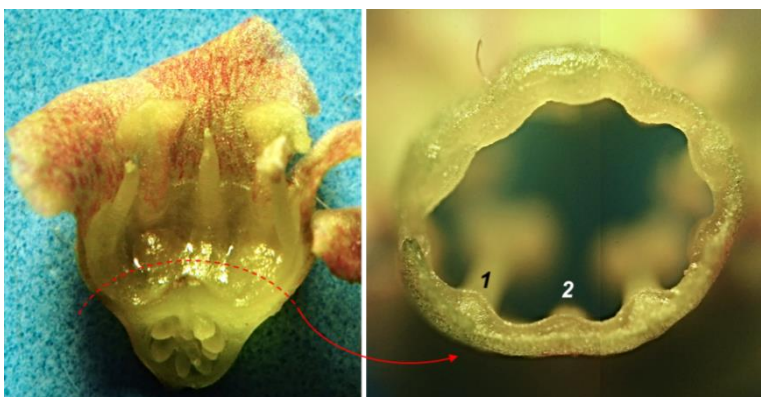
– the **lateness**: it is among the latest to break bud, flower and mature, as late as the average of the wild *R. petraeum*. What may seem like a fault is in fact a positive quality in colder regions: its flowers are rarely burnt by a late frost, so a harvest is ensured each year whatever the weather.

- the **slow adolescence** and **longevity**: a stump sprout (a new branch that grows out from the stump when old branches are cut out) takes 2 to 3 years to produce its first flowers, and then remains productive for more than six years without pruning: what we call a "marathon runner". The cultivars of *Ribes rubrum*, on the other hand, are "sprinters" who tire quickly: their stump sprouts generally flower from the second year but wither after 3 to 4 years.
- the **resistance** to fungal diseases: like 'Gabreta' it retains its leaves for a long time until autumn.
- the **cilia** along the edge of the bracts to the tip of the raceme and at the margin of the sepals.
- the **campanulate** (bell-shaped) profile of the flower.

Apex of a raceme in summer. Numerous cilia down to the last bract (1), a rare feature among the cultivars



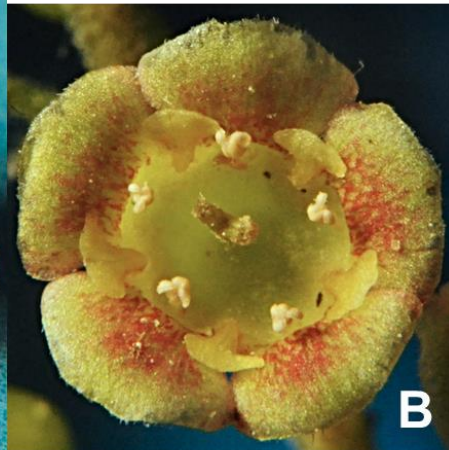
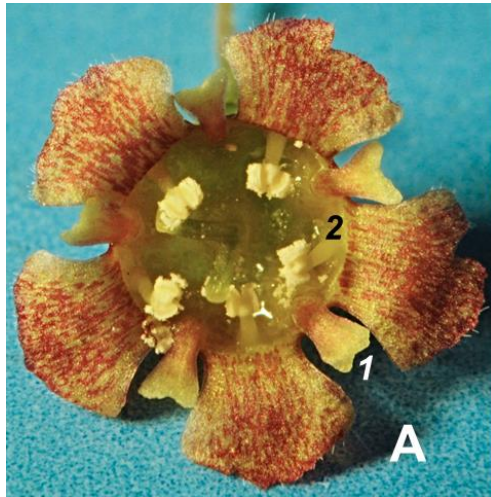
Floral profile and anthocyanins (purple pigments). A- 'Gabreta', B- 'Gondouin', C- 'Prince Albert', D- 'Earliest of Fourlands'. 1= ovary (future berry), 2= hypanthium (ends at the sinuses where the sepals separate), 3= sepals. Example of recombination (see table and text): the density of the red wash differentiates the pairs AB / CD, while the floral profile e/d distinguishes the pairs AD / BC.



The "fluted cake ring", the architectural shape of the disc of 'Prince Albert' (front and section seen from below under a microscope): 5 calluses below stamens (1) alternating with 5 calluses below petals (2). Also typical for wild *Ribes petraeum*



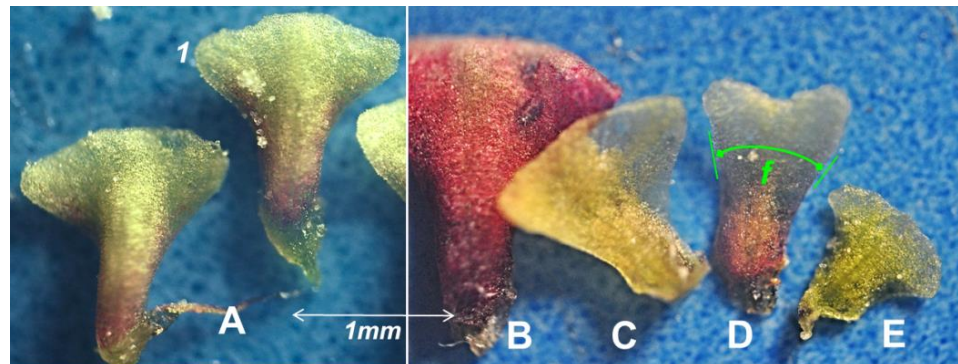
– the upper surface of the hypanthium is like a **fluted cake ring**. The hypanthium is the cup that sits on top of the ovary and carries the sepals; its upper surface (the interior of the cup) is a nectariferous disc. The shape of its protuberances is fundamental in distinguishing the species and cultivars (we have already seen 'Gabreta', KISSLING 2015). It has 10 oblong calluses (humps) that form discrete grooves in the bottom of the cup. This is a key feature of the wild *Ribes petraeum*.



Floral envelopes. A- 'Gabreta': widely-spaced sepals with streaks of anthocyanin radiating to the frontal margin, petals (1) narrow and notched; note the limit of the hypanthium (2) surrounded by the red of the sepals. B- 'Prince Albert': sepals connivent or overlapping with pink cheekbones, fan-shaped petals

- the **pinkish tone** adorning the cheeks of the upper/inner faces of the calyx.
- the relatively long **petals**.

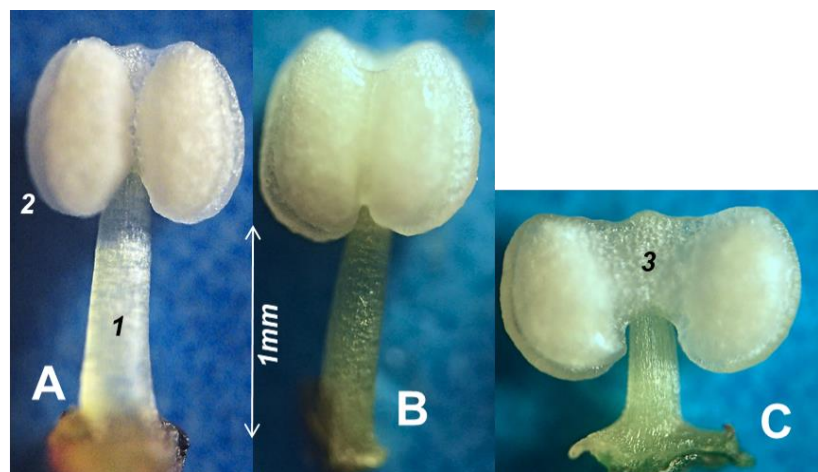
Petals (microscopy with oblique lighting, natural colours). A- 'Prince Albert' with a crossbow-shaped petal (1) B- wild *Ribes petraeum* var. *petraeum* C- 'Gondouin Rouge' D- 'Gabreta' E- *Ribes rubrum* 'La Versailles' with much smaller petals



### From *Ribes rubrum*...

It seems to have nothing. Furthermore, it has features that are common to *Ribes petraeum* and *spicatum* and clearly distinguish them from *Ribes rubrum*, like:

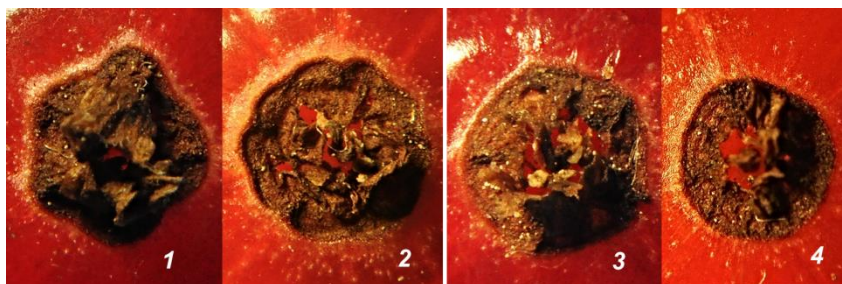
- **elongated stamens** with parallel locules; in *R. rubrum* short with divergent locules.
- the **tuft** of the berry is mostly **orbicular** whereas it is angular pentagonal in the *Ribes rubrum* group.



Stamens (as seen looking from the centre of the flower). 1= filament, its length is a notable characteristic. 2= anther with 2 locules, the proportions and orientation of the locules are notable characteristics. 3= connective, often terminating in a slight tooth.

A- 'Gabreta', B- 'Prince Albert', C- *Ribes rubrum* cv.





Tuft of the berry (remains of the hypanthium and sepals). Its shape is a determining characteristic but it varies from one berry to another. 1&2= indented : 1= pentalobed, 2= rose-shaped, 3&4 with no indentations : 3= bluntly pentagonal, 4= orbicular. 'Gabreta' and 'Gondouin Red' have all 4 forms, 'Prince Albert' and 'Earliest of Fourlands' only 3 and 4.

### From *Ribes spicatum*...

Because the hereditary baggage of *Ribes rubrum* seems to be missing, it is logical to attribute the reduction of certain characteristics of *R. petraeum* to the inheritance of the third culprit, *Ribes spicatum*:

- the faintness of the pink wash: the flower is **flesh-coloured** whereas in wild *R. petraeum petraeum* it is raspberry pink (see the photo in KISSLING 2015).

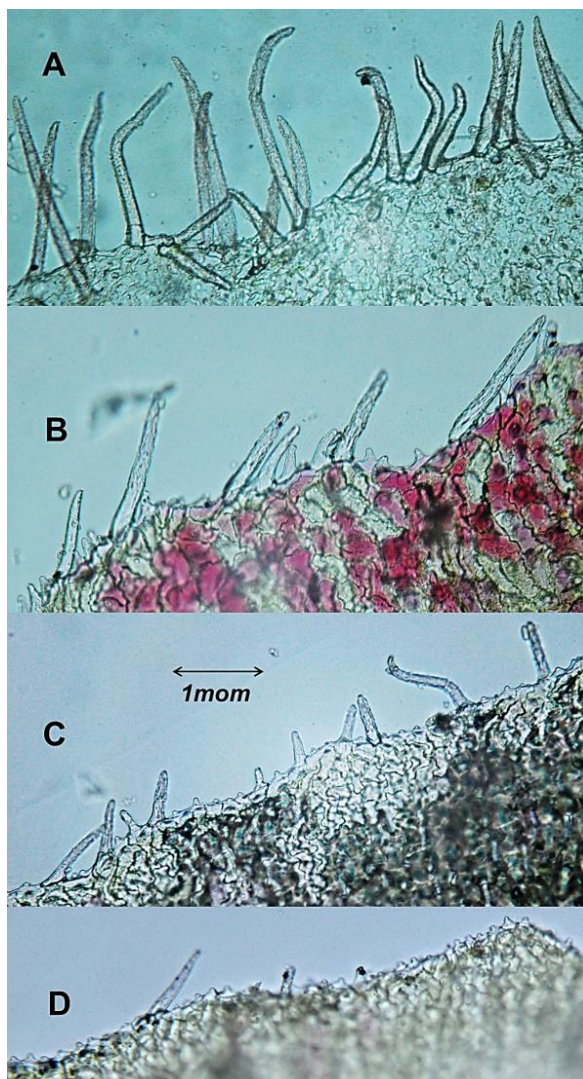
- the **reduced number of cilia**: we have counted between 24 and 67 per sepal in various clones of 'Prince Albert' with a maximum length of 0.7-1.5mm, compared with 94-154 cilia measuring 2.7-3.3mm in wild plants of *R. petraeum*.

- a slight **reduction in nectariferous calluses** on the disc, as already stated by Janczewski over a century ago: the 5 calluses facing the petals are 0.5-1.1mm thick in this cultivar compared with 1.2-1.5mm in wild *R. petraeum*.

### In short

This morphological cocktail was already noted in the 19th century, as a separate species under the name of *Ribes pallidum* (OTTO & DIETRICH 1842, 268). But the great Polish connoisseur of the *Ribes* genus, JANCZEWSKI (1901, 300), had the idea that this mix of characteristics could have originated in an old horticultural hybridisation between two species: *Ribes petraeum* var. *petraeum* x *Ribes spicatum* → *Ribes* x *pallidum* (x means hybridisation/hybrid). This hypothesis received support from a study of the genetic microscopy at first (HIMMELBAUR 1911, as "Lübecke Johannisbeere") and then went very quiet. It has just come into the limelight again in a Czech molecular genetic study (L. SVOBODOVÁ-LEIŠOVÁ, VÚRV, Prague-Růžyně, in progress).

From its morphology, this presumed hybrid seems to resemble the *petraeum* species rather than *spicatum*. The cultivars close to *Ribes petraeum* are very few in number. 'Prince Albert' is therefore one of the rare carriers of the genome of this parental species, and hence of its remarkable health-giving properties.



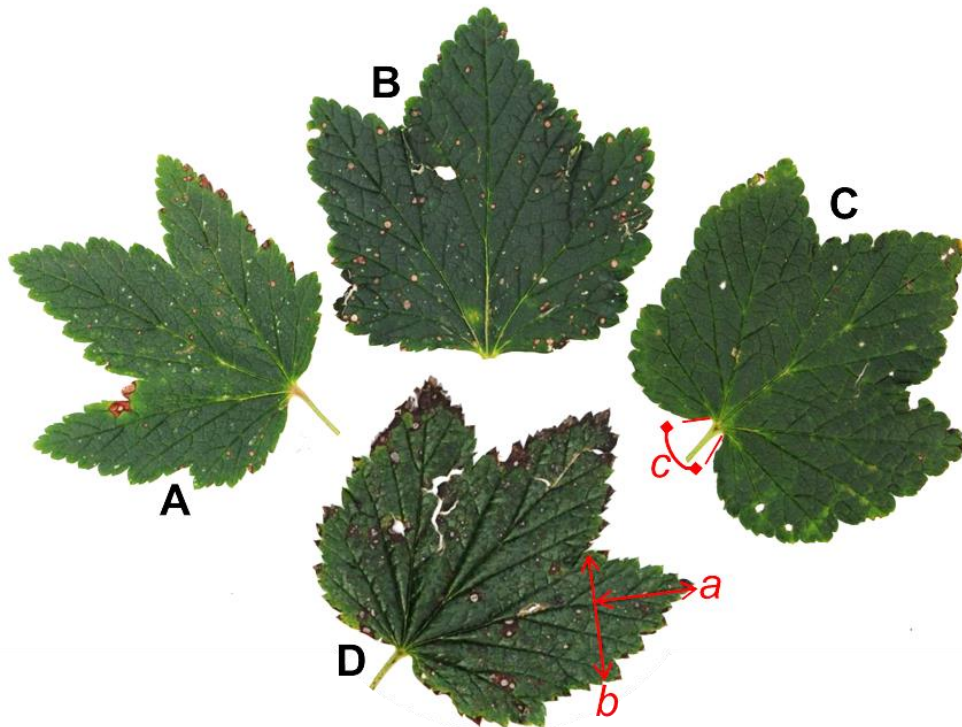
Sepal cilia (unicellular hairs set along the margin; microscopy, the same magnification). Their abundance and length are very useful for identifying red currants. A- wild *Ribes petraeum*, B- 'Gabreta', C- 'Prince Albert', D- 'Earliest of Fourlands'

## Do not confuse it with other similar cultivars

Practical identification cannot be performed merely by description of a type. What distinguishes it from similar cultivars must be noted. Regarding 'Prince Albert', the other presumed carriers of some of the genetic baggage of *Ribes petraeum* must be considered. They have all been brought together in the comparative table. For convenience, we have let another descendent of *R. petraeum*, 'Heinemann's Late', for a further leaflet, because it is modern and opens another perspective. We also set aside the "orphan" types found in too few numbers in the Sudeten ruins (Klostermann, Pernette and Radost). Several dozen characteristics distinguish 'Prince Albert'; the table shows the most flattering of these:

Biometrical traits (2 <sup>nd</sup> column) according to KISSLING (2019) 1mom (myriometre) = 0,1mm		'Gabreta'	'Gondouin Rouge'	'Prince Albert'	'Earliest of Fourlands'	
		5 clones (unless otherwise stated)	1 clone	6 clones (unless otherwise stated)	2 clones	
shoots and leaves	Y13	growth habit	upright	wide, spreading branches	intermediate	
	Q01	maximum red wash on the young herbaceous shoot after flowering		shoot almost entirely red	shoot only washed in pink	
	D01	the green of the young leaves after bud-burst		bright light green like beech	deeper green washed in russet	
	C15	5th. leaf of an adult shoot: number of stipitate glands under median rib	0 (rarely 1 isolated; 22 clones)		1 to 9 (7 clones)	23 and 33!
	W22	adult shoot leaf, lengthening of the anterior lobes: a/b ratio (photo)	a/b = 0.57 to 0.71 short obtuse lobes	a/b = 0.73 to 0.84	a/b = 0.97 to 1.24 acute elongated lobes	a/b = 0.73 to 0.82
	W04	sinus between the lobes of the adult leaf in summer	lobes fitted, not overlapping, so flat leaf			lobes excessively wide, pushing up the sinuses: rumped leaf!
	V30	angle of the basal notch: c°	c = 82 to 106° cordate leaf		c = 138 to 180°, leaf slightly or not notched	
raceme	R22	nb. apical bracteoles per pedicel	15-50%		40-150%	none!
	N15	number of cilia on the last bracts of the apex of the raceme	0 to 1.7 (33 clones)	10 to 38 (20 clones; one exception with only 3 cilia)		
the flower	G05	purple wash on the sepals	wide red band up to the apical margin		only pink cheekbones, pale margins	
	G03	purple wash under the hypanthium	red under more than half of the surface		faint, just pinkish on a greenish background	
	F05	floral profile expressed by its relative width: e/d ratio (photo)	1.89 to 1.98 pelviform	e/d= 1.18 to 1.49, campanulate		1.75 to 1.86, pelviform
	I08	gap between adjacent sepals	spaced apart		mostly connivent or overlapping	
	I18	number of cilia per sepal	60 to 127 (10 clones)	43	24 to 67 (10 clones)	5 and 8
	I19	maximum length of these cilia	1.8 to 2.3 mom	1.4 mom	0.7 to 1.5 mom	0.6 and 0.8 mom
	K11	shape of the front face of the petal	notched	straight / arched	straight / arched, some petals in the form of a crossbow	
	K12	flaring of the petal: f° (photo)	f = 30 to 55°	f = 75 to 110°		
J17-J20	interior surface of the hypanthium: nectariferous disc	"carousel": 5 horizontal ridges alternating with 5 calli 2.1 to 3mom thick		"fluted cake ring": 10 oblong calli following the slope, 0.5 to 1.1mom thick	rudimentary: fewer than 10 calli, measuring 0.4 to 0.8mom	
the berry	S05	red of the ripe berry	burgundy red	vermillion red like most of the red currants		
	S17c	diameter of the leucoplasts	1.2 to 1.6 µm		1.8 to 2.6 µm	
	S36-40	outline of the "tuft" of the berries	often indented: pentalobed or a rosette (5 or 10 lobules)		never indented	
	S41	mucilaginous epidermis of the pips	colourless until maturity		at least a few seeds pinkish at one end	
	S19	organoleptic acidity (relative rating from blind tastings)	record in acidity (but good flavour)	very acid (bad taste)	moderate like 'Jonkheer', a bit stronger than 'Rondom' and clearly much more than rubrum	



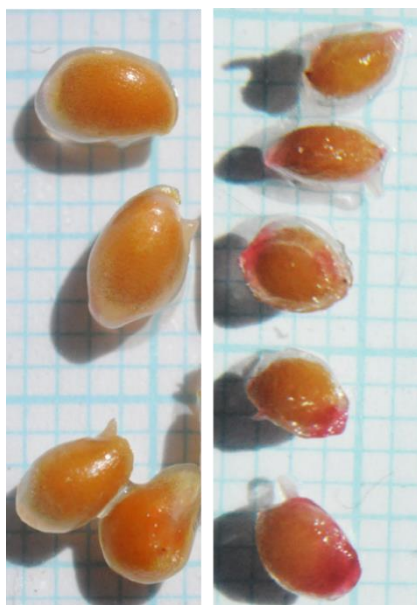


The leaves are very variable within the bush, so not a decisive factor in identifying cultivars. 'Prince Albert' (A) is an exception: it can be easily identified by its elongated lobes (only 'Heinemann's Late' resembles it in this aspect). Indispensable: only look at the leaves of the adult shoots (above the racemes). *abc* (see Table).  
 B- 'Earliest of Fourlands', C- 'Gabreta', D- 'Gondouin Red'



Axes and leaves of the raceme. 1= rachis (principal axis), 2= pedicel (carries the flower), which starts from the axil of a bract (3, reduced leaf), 4= bracteole (at most two at the top of the pedicel below the ovary; the bracteoles remain on the pedicel until autumn, even if the flower or the berry falls). 'Prince Albert' (here): many bracteoles, 'Earliest of Fourlands': none!

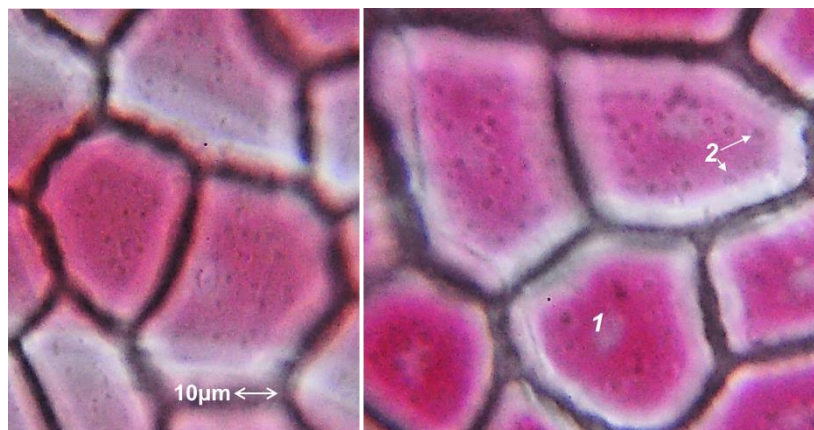
The seeds have a thick testa (mucilaginous and transparent epidermis). The invasion of it by anthocyanins varies a lot between cultivars. In 'Gabreta' (left) the epidermis remains colourless until maturity, in 'Prince Albert' the pink hue first colours the apex of some seeds in July and then spreads during maturation.



Under the main rib of a young leaf. 1= hairs (single long cells), 2= stipitate glands (a thick stalk of several cells supports a head that is yellow and then russet in summer). A rare characteristic, useful to identify 'Prince Albert', 'Earliest of Fourlands' and some others.

If you try to use this table you will notice that the characteristics are not distributed in a simple manner. For example, the 'Prince Albert' has a lot in common with 'Earliest of Fourlands': slightly notched leaves with stipitate glands beneath the ribs, faint wash on the cheekbones of the sepals, petals rounded at the apex and quite often in the form of a crossbow, thinness of the nectariferous calli facing the petals, berry epidermis with large leucoplasts, the tufts (marcescent remains of the flower) never indented and mostly rounded, pips with pink mucilage at the apex, moderate acidity. On the other hand, from the floral profile, the number and length of the sepal cilia it more closely resembles 'Gondouin Red'. This mixture of characteristics in different arrangements is called *recombination*. It is known among groups of hybrids: it seems as though each hybrid has visited a self-service gene counter of its parents to select an original menu.

Leucoplasts (microscope with high magnification). Peel the skin of the berry: it has two layers of cells, one can see the superficial here, the epidermis. The pink areas are pockets of anthocyanins (vacuoles) which almost completely fill many cells. Packed under the vacuole at the base of each cell, are the nucleus (1) and about 20 refractive grains (2). They measure 1 to 3 µm and their size differentiates groups of cultivars: here we show 'Gabreta' on the left and 'Prince Albert' on the right (the same magnification).



## Final doubts

Identification will leave some doubt because 'Prince Albert' is not very uniform: bushes can have paler berries, flowers that are more or less colourful, sepals that are more or less ciliate and shrubs can vary in vigour. Over three centuries a cultivar widely grown in Europe has been able to diversify despite propagation by cuttings.

Furthermore, confusion remains regarding nomenclature. The nomenclature code for cultivars tolerates the translation of names of old cultivars. 'Rote Holländische', 'Holandský Červený', 'Rouge de Hollande', 'Röda Holländska', 'Rød Hollandsk Druerips', 'Røde Hollandske Ribs' are synonyms that present no problem at first sight. In English, however, the translation would be "Red Dutch", but this name was used until the middle of last century particularly in America for another old cultivar in the *Ribes rubrum* group, while the cultivar described here was known as 'Prince Albert' in Great Britain and America (ELLIOTT 1859, 234 – THAYER 1923, 364 – BERGER 1924, 19 – HEDRICK et al. 1925, 292-294). The situation has been further complicated with the modern hegemony of English. The name "Red Dutch" currently refers to both cultivars, depending on the source: for example, in the big North-European RIBESCO catalogue (RYLISKIS 2011), "Red Dutch" refers to the 'Prince Albert' we are dealing with here.

At the same time, a penetrant study of HAHN (1934) underlines the interesting resistance to fungal diseases of a Norwegian cultivar imported to USA. This cultivar is morphologically very similar to 'Prince Albert / Rote Holländische' (see the illustration of the leaf in Hahn's publication), nevertheless flower and fruit description are not sufficient. But its useful physiological properties seemed to be worth a new name, and Hahn proposed 'Viking'. A name still accepted besides 'Prince Albert' (BARNEY & HUMMER 2005, 117-119).

So this very popular type, apparently well-known and common in gardens of temperate Europa and North America will deserve a new biometrical-genetic surveying.

## Following its history

It is one of the oldest known varieties of red currant. Its origin is lost in the 18th century (perhaps 17th) (MILLER 1785, 301 – BUNYARD 1917, 267-268) probably in northern Europe.



It was still one of the main commercial varieties in Czechoslovakia in 1965 but it tended to get ousted by 'Rondom', according to BLATTNÝ et al. (1971, p. 320). It is also the second main variety found in the vestiges of pre-war Sudetenland in the Bohemian Forest<sup>1</sup> (about 50 bushes out of 270 studied so far), after 'Gabreta' (about 100 out of 270).

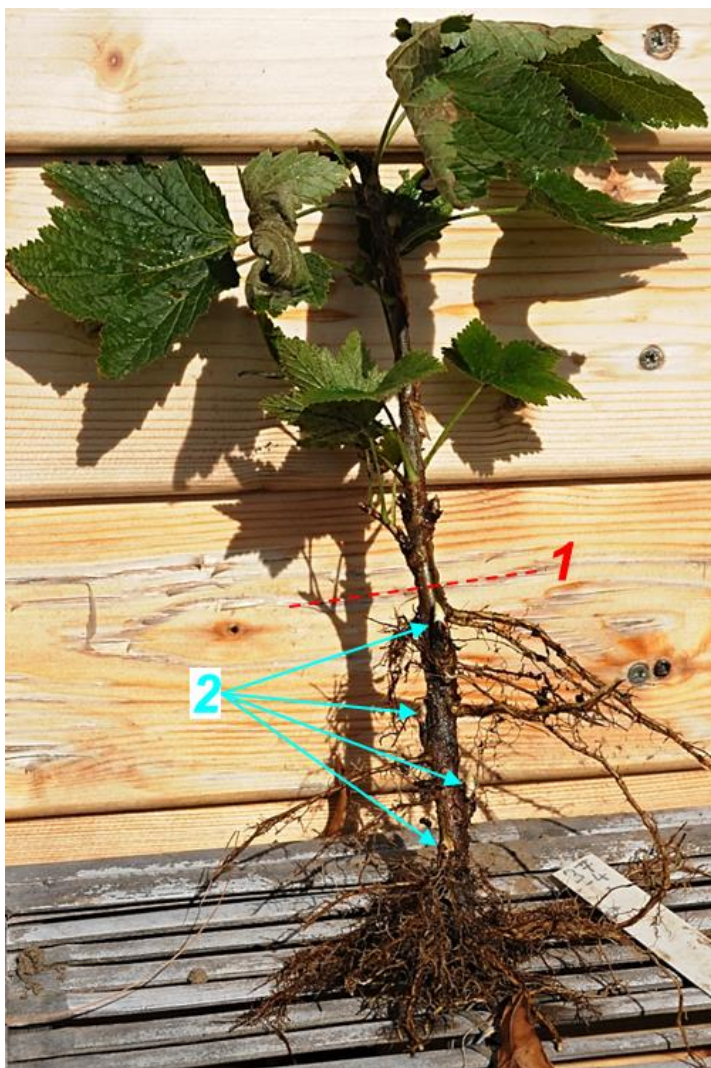
It has also been a direct parent in modern selections such as German 'Heinemann's Late' in 1942 (BUNDESSORTENAMT 2002, 20), Estonian 'Kurvitsa 4' in 1972 (RYLISKIS 2011) and Czech 'Orion' in 1996 ([http://sempra.vlosiny.sweb.cz/rybiz.html#\\_ORION](http://sempra.vlosiny.sweb.cz/rybiz.html#_ORION)). And through 'Heinemann's', the hereditary baggage has passed into numerous recent hybrids of red and white currants, for example 14 new Czechoslovakian cultivars between 1977 and 2010 (see <http://www.vuood.sk/geneticke-zdroje/ribezla-cervena-a-biela/>). Among others, one of its "grandchildren" is called 'Maraton' (1979-1991), the work of Mr. and Mrs. CVOPA, important currant breeders in the Breeding Institute of Bojnice (SK). It is therefore the main genealogical portal through which the hereditary baggage of *Ribes petraeum* has permeated the world of cultivated red currants.

## Living with it

### In the garden

Like other descendants close to *Ribes petraeum*, it needs time (several years' growth until production) and space (a spacing of 2 metres is not too much for its full potential). But after that it will not require any care for many years and will produce faithfully. So it tests the patience of the gardener but rewards it. A late harvest must be expected: at 650m in the Bohemian Forest, from 10 to 20 August.

It is remarkably easy to grow from cuttings – a branch simply placed in a glass of water can grow and develop roots. A cutting will also grow like a marathon runner, slowly at first and with the wide growth habit of *Ribes petraeum*: in the first year not much can be seen above the ground while it is growing powerfully below, where it produces a strong bunch of roots, not only at the cutting apex as most of the cultivars do, but along the whole length underground; and the branching of the bush already begins with the bud-break of hypogaeous white lateral buds. It is only in the second or third year that the stem of the bush grows up. It then branches spontaneously, without the need to pinch out the first shoot to induce any branching.



A cutting of 'Prince Albert' unearthed after one year. 1= ground level, 2= 4 white underground budding buds

<sup>1</sup> Thanks to PETR MÍŠEK and MARIE JANA KRUPÍČKOVÁ for precious contribution to this land prospection.

## In the kitchen

'Prince Albert' is very versatile. Juicy enough for squeezing the juice to make syrup or wine, it is also rich enough in pectin to make into jelly – the palest red jelly we know – without the addition of apple pectin ; although some years it turns out differently and is less reliable than 'Gabreta'; it is advisable to cook it in small quantities of less than a kilo to help it set. Note that it is less aromatic than 'Gabreta'. It is just sweet enough to be enjoyable raw in yoghurt or a dessert, or cooked in a flan or a sponge cake.



'Gabreta' and 'Prince Albert' at the finishing line

## The assessment

It is outdated for large-scale cultivation. It is still good for a home garden because of its lateness and its regular production in areas with late frosts, its disease resistance and vigour in cold and wet climates, so in mountain areas and in the North. It is said to be unsuitable for dry areas, such as Southern Moravia, however. Please note the variations above: some clones are mediocre in vigour or taste. Among the Sudeten sources in the Bohemian Forest as amateurs we found two of the finest, which were offered in the Gengel associative gene bank (riru 018 and 037 from the Alenor collection). The clone BE-652 from the Pro Specie Rara association (CH) is also very vigorous. But the assessment of the differences in performance within this cultivar would still require an agronomic study.

Considering, furthermore, its central role in the history of cultivated European red currants and its scientific interest in the study of presumed hybridisation, 'Prince Albert' is simply a great classic.

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