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Vireyas



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### JOURNAL CONTACTS

**Journal Editor:** Glen Jamieson, Ph.D.

**Issue Layout:** Sonja Nelson

**Journal Technical Reviewers:** Steve Hootman, Hartwig Schepker, Juliana Medeiros

Comments on any aspect of this journal and future articles for consideration should be submitted in digital form to:

Dr. Glen Jamieson

rhodojournal@gmail.com

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# From the Editor

**Dr. Glen Jamieson**  
**Parksville, BC**  
**Canada**



*Rhododendrons International* (RI) is an online journal distributed free to all the world's known rhododendron associations for their internal distribution. It can also be accessed without charge on the American Rhododendron Society website at <https://www.rhododendron.org/ri-index.htm>. This eighth issue of RI includes eight articles, some modified slightly from those printed initially, that I have extracted from various rhododendron publications that I feel are worthy of wider world-wide distribution. Articles in this volume are from different publications, each specifically acknowledged at the beginning of an article. I regularly search botanical publications for worthwhile rhododendron articles I deem to be of international significance for wider distribution through RI issues. I also welcome submissions from authors of such material that I might not be aware of, so please feel free to bring such material to my attention at [rhodjournal@gmail.com](mailto:rhodjournal@gmail.com), and please put "Rhododendrons International" in the subject line.

Finally, I would like to express my big appreciation to Sonja Nelson, the volunteer layout editor, for all her hard work in producing each issue of *Rhododendrons International*. Without her involvement and support, this journal would not exist!

# Identifying Big-leaved *Rhododendron* species

Ole Jonny Larsen  
Aalesund,  
Norway



All photos by author  
unless noted

*(Reprinted from Rhododendron Species 2022)*

The *Rhododendron* species belonging to subsections *Falconera* and *Grandia* are often referred to as the “big-leaved species.” This is not a very precise designation, for two reasons. First, they do not all have big leaves, and second, other *Rhododendron* species with big leaves are not included in the group. Just think of species like *R. calophytum*, *R. asterochnoum*, *R. sutchuenense*, *R. uvariifolium*, *R. mallotum*, *R. auriculatum*, *R. glischrum*, *R. fulvoides* and *R. prattii*. Some of these, when seen in nature, can easily be mistaken for being a *Falconera* or *Grandia* species. Still, this article will only deal with those species normally included in these two subsections. I will try to go into identification problems in this group, especially when they are out of flower. If one learns to use some few distinct features, maybe in the end identification is not that difficult after all.

The big leaved species are wonderful plants, especially those with the largest leaves and grandest stature. Some can grow very big, and the enormous leaves on *R. sinogrande* are always real eye catchers, this species having the largest leaves in *Rhododendron*.

In Norway where I live, the big-leaved rhododendron species some decades back were not considered suited for our climate, not even along the relatively mild western and southern coastlines. Some of the early collectors had imported such plants for their gardens in the



Fig. 1. Unistrate (smooth) indumentum.



Fig. 2. Bistrate (woolly) indumentum.

seventies, but unusually cold winters at that time killed most of them. This led to a “truth” among rhododendron people that there was no point in trying: Norway was just too cold for big-leaved rhododendron culture, and thus almost no one dared to try for decades.

This changed a few decades ago. The climate was becoming milder, new gardens were becoming established and so the “old truths” were becoming challenged. To make it short, during the last three decades, hundreds of *Falconera* and *Grandia* species have been planted in Norwegian gardens, with many having already reached a flowering age. Some are now 3-4 m (10-13 ft) tall, and nearly all these subsection species are present somewhere along the Norwegian coast.

A cultivation challenge with the bigleaved rhododendron species is that they need years of growth before they begin to start flowering. And without flowers, their identification is difficult. I thought much about this, and it finally led to my writing a book (Larsen 2022) about big-leaved rhododendron culture in Norway (sorry, only in Norwegian!). An important part of my book is how to identify these species just by their leaves and some other features, which I now will present.

## Indumentum

The overall most important plant feature to learn is to be able to tell the difference between unistrate and bistrate leaf indumentum. All rhododendron leaves are green underneath, but some are covered with an indumentum that hides the green colour of the lower surface. All big-leaved *Rhododendron* species develop indumentum, but how long this takes to appear differs between the various species. *R. arizelum* starts getting indumented after only two years, but *R. protistum* needs 50-60 years to reach maturity and develop its indumentum.

One-layered (unistrate) indumentum (Fig. 1) is smooth, sometime almost shiny. It can be hard to rub off, but when it is done, the leaf’s green lower surface becomes visible. Two-layered (bistrate) indumentum (Fig. 2) has a woolly layer on top. This comes easily off when rubbed, and then the smooth lower indumentum layer will show. The microscopic photo (Fig. 3) shows C – the woolly top layer, B – the thinner smooth lower layer and A – the green leaf itself after both indumentum layers are removed.

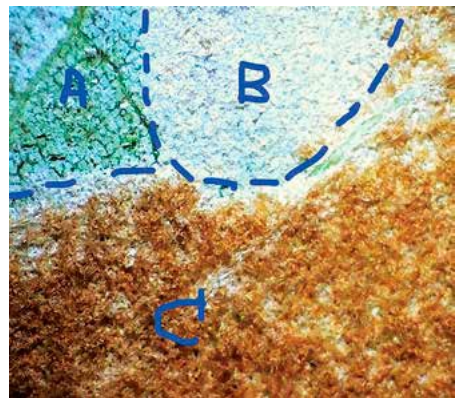


Fig. 3. A microscopic photo of a bistrate leaf showing C – the woolly top layer, B – the thinner first layer and A – the green leaf itself after both indumentum layers are removed. Photo by Finn Bertelsen.

For some species, the woolly top layer partly falls off naturally in one- to three-year-old plants. Thus, for good identification, it is important first to study the characteristics of leaves on young plants.

With some experience, it is easy to tell if a rhododendron has one or two layers of indumentum. All *Falconera* species have two layers, and most *Grandia* species have one, but, alas, not all.

### Petioles and leaf shape

The big-leaved *Rhododendron* species can have either rounded or winged petioles. With some species like *R. praestans* and *R. rothschildii*, these winged petioles are very prominent, while for others, like *R. heatherae* and *R. basilicum*,

the wings/ridges are less in the big-leaved group have rounded petioles, that are sometimes a little flattened.

When a plant has winged petioles, the leaf lamina seems to taper on to the petiole. There is thus no clear stage where the leaf ends, and the petiole starts. With most other species, this transition is very clear, and you never doubt what the two leaf parts are. Some species with narrow leaves form a kind of transitional form, with a slight difference between the leaf and petiole, but it is not very evident.



Fig. 4. Rounded petiole.



Fig. 5. Winged petiole.



Fig. 6. Ridged petiole.



Fig. 7. *R. praestans*.

Some big leaved *Rhododendron* species have bigger leaves than others! Some growers call them “the really big-leaved species,” and *R. sinogrande*, *R. hodgsonii*, *R. falconeri* and *R. macabeanum* are all really big-leaved. Conversely, *R. pudorosum*, *R. coriaceum*, *R. balangense* and *R. sidererum* have relatively

small leaves. Of course, some species can fit into with both groups, depending on their growth conditions and exposure to wind, sun, and frost. Also, younger plants have bigger leaves than old, branched specimens.

Now we have four features to use for identification, indumentum, petiole shape, leaf-petiole difference and leaf size. With all kinds of reservations, we can now use the two following tables as a quick identifying guide to big-leaved *Rhododendron* species. This will at least allow plant identification to only a few species, which makes final identification much easier. However, as with all living organisms, there will always be exceptions and some plants not really fitting into a relatively crude table.

### **Further comments on individual species' features:**

I will now go into some more identifying features and facts about each species. These are useful when one has first used Tables 1 and 2 to determine the most similar species, and thus now to separate them and make a final identification.

#### ***R. praestans*** (Fig. 7)

Has unistrate indumentum and very prominent wings on the petioles, and can only be mistaken for *R. rothschildii* (if the latter's bistrate indumentum is not showing), but *praestans* is bigger in all parts. Some plants have long narrow leaves. Very slow growing. Rounded flower buds. Very hardy.

#### ***R. watsonii*** (Fig.8)

Yellow midrib and petiole, very short petioles. Smooth, shiny leaves. Takes many years to develop an indumentum. Very hardy. Mostly white flowers.

#### ***R. grande***

Variable leaf shape, but mostly with long narrow leaves. Grey-white indumentum. Most introductions are quite tender.

#### ***R. kesangiae*** (Fig. 9)

Striking rounded buds that are often dark coloured. Bushy growth habit, never treelike. Very special "knobs" on the last year's shoots, which only *R. kesangiae* has! Quite hardy.

#### ***R. montroseanum*** (Fig. 10)

Large narrow leaves in young plants with pronounced veins. Upright growth. Leaf buds with elongated scales. Dark pink flowers. (sometimes called the "pink sinogrande") some suggest that this species evolved from both *R. sinogrande* and *R. lanigerum* (Subsection *Arborea*). Medium hardiness.

**Table 1: Species with unistrate (one layered) indumentum.**

**A.**

Species	Unistrate indumentum and winged petioles	Leaves tapering on to the petiole, no clear transition	Large leaves
<i>R. praestans</i> <i>R. watsonii</i> <i>R. grande</i> <i>R. montroseanum</i> <i>R. pudorosum</i> <i>R. sidereum</i> <i>R. sinogrande</i> <i>R. kesangiae</i> <i>R. magnificum</i> <i>R. protistum</i>	<i>R. praestans</i> <i>R. watsonii</i>	<i>R. praestans</i>	<i>R. praestans</i>
(All have smooth indumentum, but <i>R. kesangiae</i> and <i>R. grande</i> can also have a more woolly indumentum.)		<b>Obvious transition between leaves and petiole</b>	<b>Small leaves</b>
			(none)
			<b>Large leaves</b>
			(none)
			<b>Small leaves</b>
		<i>R. watsonii</i> (Note: short petiole)	<i>R. watsonii</i>

**B.**

Species	Unistrate indumentum without winged petioles	Leaves tapering on to the petiole, no clear transition, especially if leaves are narrow.	Large leaves
<i>R. praestans</i> <i>R. watsonii</i> <i>R. grande</i> <i>R. montroseanum</i> <i>R. pudorosum</i> <i>R. sidereum</i> <i>R. sinogrande</i> <i>R. kesangiae</i> <i>R. magnificum</i> <i>R. protistum</i>	<i>R. grande</i> <i>R. kesangiae</i> <i>R. montroseanum</i> <i>R. pudorosum</i> <i>R. sidereum</i> <i>R. sinogrande</i> <i>R. magnificum</i> <i>R. protistum</i>	<i>R. pudorosum</i> <i>R. sidereum</i> <i>R. grande</i> <i>R. magnificum</i>	<i>R. grande</i> <i>R. magnificum</i>
(All have smooth indumentum, but <i>R. kesangiae</i> and <i>R. grande</i> can also have a more woolly indumentum.)		<b>Clear transition between leaves and petiole</b>	<b>Small leaves</b>
			<i>R. pudorosum</i> <i>R. sidereum</i>
			<b>Large leaves</b>
		<i>R. kesangiae</i> <i>R. montroseanum</i> <i>R. sinogrande</i> <i>R. protistum</i>	
		<i>R. kesangiae</i> <i>R. montroseanum</i> <i>R. sinogrande</i> <i>R. protistum</i>	<b>Small leaves</b>
			(none)



Fig 8. *R. watsonii*.



Fig 9. *R. kesangiae*.

**Table 2: Species with bistrate indumentum.**

**A.**

Species	Bistrate indumentum and winged petiole	Leaves tapering on to the petiole, no clear transition	Big leaves
<i>R. macabe anum</i> <i>R. basilicum</i> <i>R. preptum</i> <i>R. heatherae</i> <i>R. rothschildii</i> <i>R. semnoides</i> <i>R. balangense</i> <i>R. coriaceum</i> <i>R. galactinum</i> <i>R. arizelum</i> <i>R. falconeri</i> <i>R. hodgsonii</i> <i>R. rex</i> <i>R. sinofalconeri</i> <i>R. titapuriense</i>  (All have woolly indumentum, but can be less obvious for <i>R. balangense</i> .)	<i>R. basilicum</i> <i>R. preptum</i> (see note) <i>R. rothschildii</i> <i>R. semnoides</i> <i>R. heatherae</i> <i>R. balangense</i>	<i>R. basilicum</i> (not always obvious) <i>R. rothschildii</i> <i>R. semnoides</i> <i>R. heatherae</i>	<i>R. basilicum</i> <i>R. rothschildii</i>  <b>Small leaves</b> <i>R. heatherae</i> <i>R. semnoides</i>
		<b>Clear transition between leaves and petiole</b>  <i>R. preptum</i> (normally) <i>R. balangense</i> (short petiole!)	<b>Large leaves</b>  (none)  <b>Small leaves</b> <i>R. balangense</i> <i>R. preptum</i>
	<b>Bistrate indumentum without winged petiole</b>  <i>R. macabe anum</i> <i>R. coriaceum</i> <i>R. galactinum</i> <i>R. arizelum</i> <i>R. falconeri</i> <i>R. hodgsonii</i> <i>R. rex</i> <i>R. sinofalconeri</i> <i>R. titapuriense</i>	<b>Clear transition between leaves and petiole</b>  <i>R. macabe anum</i> <i>R. coriaceum</i> <i>R. galactinum</i> <i>R. arizelum</i> <i>R. falconeri</i> <i>R. hodgsonii</i> <i>R. rex</i> <i>R. sinofalconeri</i> <i>R. titapuriense</i>	<b>Large leaves</b>  <i>R. macabe anum</i> <i>R. falconeri</i> <i>R. hodgsonii</i> <i>R. rex subsp. rex</i> <i>R. sinofalconeri</i>  <b>Small leaves</b> <i>R. coriaceum</i> <i>R. galactinum</i> <i>R. arizelum</i> <i>R. titapuriense</i> <i>R. rex subsp. fictolacteum</i>



Fig. 10. *R. montroseanum*.



Fig. 11. *R. pudorosum*.

**Table 2: Species with bistrate indumentum. (continued)**

**B.**

Species	Bistrate indumentum without winged petiole	Clear transition between leaves and petiole	Large leaves
<i>R. macabeanum</i>		<i>R. macabeanum</i>	<i>R. macabeanum</i>
<i>R. basilicum</i>		<i>R. coriaceum</i>	<i>R. falconeri</i>
<i>R. preptum</i>		<i>R. galactinum</i>	<i>R. hodgsonii</i>
<i>R. heatherae</i>	<i>R. macabeanum</i>	<i>R. arizelum</i>	<i>R. rex</i> subsp. <i>rex</i>
<i>R. rothschildii</i>	<i>R. coriaceum</i>	<i>R. falconeri</i>	<i>R. sinofalconeri</i>
<i>R. semnoides</i>	<i>R. galactinum</i>	<i>R. hodgsonii</i>	
<i>R. balangense</i>	<i>R. arizelum</i>	<i>R. rex</i>	<b>Small leaves</b>
<i>R. coriaceum</i>	<i>R. falconeri</i>	<i>R. sinofalconeri</i>	<i>R. coriaceum</i>
<i>R. galactinum</i>	<i>R. hodgsonii</i>	<i>R. titapuriense</i>	<i>R. galactinum</i>
<i>R. arizelum</i>	<i>R. rex</i>		<i>R. arizelum</i>
<i>R. falconeri</i>	<i>R. sinofalconeri</i>		<i>R. titapuriense</i>
<i>R. hodgsonii</i>	<i>R. titapuriense</i>		<i>R. rex</i> subsp. <i>fictolacteum</i>
<i>R. rex</i>			
<i>R. sinofalconeri</i>			
<i>R. titapuriense</i>			
(All have woolly indumentum, but can be less obvious for <i>R. balangense</i> .)			

***R. sinogrande***

Has the biggest leaves on any *Rhododendron*, especially on young plants. Smooth indumentum. Unmistakable! Tender, needs shelter from wind.

(*R. sinogrande* “var. boreale” may be slightly hardier than “var. sinogrande”.)

***R. pudorosum*** (Fig. 11)

Last year’s growth is covered in persistent perulae (one of the scales of a leaf bud), a very characteristic feature! Pagoda shaped leaf buds, similar to *R. hodgsonii*, but smaller. Small in all parts. Bushy growth habit. Slow growing. Pink flowers, very early flowering. Very hardy.



*R. rothschildii* (Fig. 12).



*R. heatherae*. Fig. 13.

### ***R. sidereum***

Narrow, small leaves with a matted upper surface (tomentum). Yellow flowers (sometimes white). Quite tender.

### ***R. basilicum***

Quite similar to *R. rothschildii*, but with less expressed winged petioles and a more woolly indumentum. Quite hardy.

### ***R. rothschildii*** (Fig.12)

Very prominent wings on the petioles. A granular indumentum is the best feature for identification. Buds mostly of a deep crimson purple colour. May have evolved from a cross between *R. arizelum* and *R. praestans*, and sometimes geographically isolated. Hardy.

### ***R. preptum***

This species is considered a natural hybrid between *R. arizelum*, *R. coriaceum* or *R. rex* subsp. *fictolacteum*. Only two introductions are known. In its description, winged petioles are specified, but the fact that the most sold clone, 'Portmeirion', has rounded petioles, causes confusion. Quite hardy.

in Yunnan, where transitional forms occur. Selected forms for sale have winged petioles and a yellow/brownish indumentum. Quite hardy.

***R. heatherae*** (Fig. 13) (Its earlier name of *R. heatheriae* is invalid due to grammar rules.)

Introduced in 2011. At least two clones are in culture, differing in leaf size. According to the description, correct plants at maturity have leaves less than 20 x 5.5 cm (7.9 x 2.2 in), slightly winged petioles and a rusty brown bistrate indumentum. Hardy.

### ***R. semnoides***

Considered a natural hybrid between *R. arizelum* and *R. praestans*, growing in height between those two species in Yunnan, where transitional forms occur. Selected forms for sale have winged petioles and a yellow/brownish indumentum. Quite hardy.

### ***R. balangense*** (Fig. 14)

This plant has the smallest leaves of all big-leaved species. In recent years most writers will place this species in subsection *Taliensia*. Auriculated leaves, pointed buds, very short petiole and the overall smaller stature makes this species easy to

identify. Yellow midrib on the leaves gives a hint of relationship with *R. watsonii*. Very hardy.

***R. heatherae*** (Fig. 13) (Its earlier name of *R. heatheriae* is invalid due to grammar rules.)

Introduced in 2011. At least two clones are in culture, differing in leaf size. According to the description, correct plants at maturity have leaves less than 20 x 5.5 cm (7.9 x 2.2 in), slightly winged petioles and a rusty brown bistrate indumentum. Hardy.

***R. semnoides***

Considered a natural hybrid between *R. arizelum* and *R. praestans*, growing in height between those two species in Yunnan, where transitional forms occur. Selected forms for sale have winged petioles and a yellow/brownish indumentum. Quite hardy.

***R. balangense*** (Fig. 14)

This plant has the smallest leaves of all big-leaved species. In recent years most writers will place this species in subsection *Taliensia*. Auriculated leaves, pointed buds, very short petiole and the overall smaller stature makes this species easy to identify. Yellow midrib on the leaves gives a hint of relationship with *R. watsonii*.

***R. macabeanum***

Large, thick, shiny leaves with prominent nerves and yellow midrib are characteristics for this species. Large in all parts. Flowers yellow (rarely white). Can grow very big. Quite tender.

A smaller high-altitude version, NAPE 052, introduced in 2003, has so far not flowered in cultivation.

***R. falconeri***

Massive plants, large in all parts, can form big trees. There are two subspecies in culture, subsp. *Falconeri* and subsp. *Eximium*. A main difference is that the latter has rust brown indumentum on top of the new leaves while the former is glabrous. Quite tender.



Fig. 14. *R. balangense*.



Fig. 15. *R. hodgsonii*.



Fig. 17. *R. titapuriense*.



Fig. 16 *R. galactinum*.

***R. hodgsonii*** (Fig 15)

Large growing plants with smooth leaves. The buds have the shape of a pagoda, a very good diagnostic feature. Flowers in various red colours, often deep and striking. Reddish new growth. Very hardy for a big-leaved rhododendron. *R. hodgsonii* aff. is close to *R. hodgsonii*, but with dark brown indumentum.

***R. rex***

A variable species with several subspecies and varieties. Often merging with each other giving transition forms. Shiny leaves and thick, wooly indumentum. Growth buds are quite distinct. Some later introductions have matt leaves. Maybe the most common big-leaves rhododendron species in cultivation. Hardy.

***R. sinofalconeri***

Introduced in 1995. A large growing tree-like species with big leaves. (Vietnamese forms tend to have more bush-like growth.) Flowers yellow. Hardier than first believed, but still a little tender.

***R. coriaceum***

Can be taken for a small leaved *R. rex* at first sight, but the greyish indumentum is a good feature for identification. Not very hardy.

***R. galactinum*** (Fig. 16)

Differs from most other species in this group. Quite small, narrow leaves, often tends to be chlorotic. Striking hairy buds. Can grow quite large. Very hardy.

***R. arizelum***

The thick, wooly, brown to cinnamon indumentum is a good start for identification. Dark green leaves, often bullate and with an obovate shape. Medium hardiness.

***R. suoilenhense***

Introduced in 1992 from Vietnam. Very large leaves when young. Keeps only last year's leaves, which gives the plants a leggy appearance. So far, it seems tender.

***R. magnificum*, *R. titapuriense*** (Fig. 17) and ***R. protistum***

These species are rare in gardens due to their tenderness and low availability in the trade. Can be grown in containers for indoor storage during winter.

## ***R. mechucae***

Described in 2013, has only been in culture for a few years. Not available for the common plant trade yet.

### **What about flowers?**

Flowers are normally important for species identification. When we speak about the big-leaves *Rhododendron* species, this is a little troublesome because most species have colour variations, and some of the species have a wide range of flower colours. I will now present three tables for flower colour for all species. First, Table 3 for species which have only one flower colour. Then Tables 4 and 5 for species with two or several alternative colours. Keep in mind that some species also have flowers with a blotch which is important for identification. Early or late flowering seasons are other important features.

### **Hybrids**

Many big-leaved species hybridize in nature. Some of these hybrids have got their own names like *R. x decipiens* and *R. x wattii*. Such names are not given anymore. Since these are hybrids, they can vary a lot and precise descriptions cannot be made. As mentioned before, some of the big-leaved rhododendrons we call species most likely have a hybrid origin. In large gardens old specimens sometimes produce seedlings around themselves. If these are planted in a garden, they can make lovely plants, but there is a great chance for them to be hybrids.

Plant collectors who go to new areas, often find big-leaved plants which they cannot identify. In those cases, there are mainly two possibilities: They have found a natural hybrid, or it is a new species never described before. In my garden I have an Alan Clark collection which was listed as *R. arizelum* aff. It is now 1.5 m (5 ft) tall, has big leaves and just a small rim of indumentum along the leaf edges. It is definitely not *R. arizelum*. I also have a Keith Rusforth collection called *R. Subs. Grandia* cf. *magnificum*. It is a fine plant with large leaves, but a surprising thing about it is that it is very hardy! Traditional *R. magnificum* is not a species I would expect to grow in my garden.

My point with these paragraphs about hybrids is to stress that my identification guidelines will not work for all big-leaved plant you meet. This article is provided to help identify those ca. 30 species and some subspecies and varieties we normally meet in gardens. Now it is up to you to start looking at yours and other plants with a new view, learn to recognize the different indumentum types, look for wings/ ridges on the petioles and see the differences in leaf shape. After some time, I am sure you will be good at identifying the big-leaf species!

**Table 3. Species with one flower colour.**

Species	Flower colour
<i>R. falconeri</i> subsp. <i>eximium</i>	Pink
<i>R. falconeri</i> subsp. <i>falconeri</i>	Soft yellow
<i>R. sinofalconeri</i>	Yellow variations
<i>R. kesangiae</i> var. <i>kesangiae</i>	Pink
<i>R. kesangiae</i> var. <i>album</i>	White
<i>R. montroseanum</i>	Pink variations
<i>R. titapuriense</i>	Cream
<i>R. pudorosum</i>	Pink variations
<i>R. mechucae</i>	Pink

**Table 4. Species with two colours.**

Species	Main flower colour	Alternative colour
<i>R. coriaceum</i>	White	Pink edges
<i>R. galactinum</i>	White	Soft pink
<i>R. preptum</i>	White, creamy white	White tinged pink
<i>R. rex</i> (all forms)	White	Pink, (pale yellow)
<i>R. hodgsonii</i>	Purple variations	Pink
<i>R. galactinum</i>	White	Soft pink
<i>R. semnoides</i>	White	Flushed pink
<i>R. heatherae</i>	Whiteish	Pink
<i>R. balangense</i>	White	White tinged pink
<i>R. macabeanum</i>	Yellow	Cream
<i>R. magnificum</i>	Pink	Reddish-purple
<i>R. praestans</i>	White	Pink variations
<i>R. protistum</i>	Pink	Crimson-purple
<i>R. sidereum</i>	Yellow	Cream
<i>R. sinogrande</i>	White	Pale yellow
<i>R. suoilenhense</i>	White	Cream

**Table 5. Species with several alternative colours.**

Species	Colours
<i>R. arizelum</i>	Cream, yellow, pink, mauve, apricot, deep red, etc.
<i>R. rotschildii</i>	White, cream, yellow, pink
<i>R. basilicum</i>	White, cream, pink, flushed purple
<i>R. grande</i>	Cream, yellow, pink

*Ole Jonny Larsen is a member of the Danish Chapter. He is a retired school teacher. He has one of the largest collections of Rhododendron species collections in Norway.*

# Iceland: Its Geography, Botany and Rhododendron Gardens

Glen Jamieson  
Parksville, BC,  
Canada

Photos by author  
except as noted.



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In May, 2017, Kristian Theqvist was invited to Iceland by Vilhjálmur Lúðvíksson, a keen and knowledgeable gardener and a past president of the Icelandic Horticultural Society, to advise interested rhododendron growers there on how best to grow rhododendrons. Kristian is a successful rhododendron grower in Turku, Finland, which has some similar climate characteristics to Iceland, but soils that are markedly different. He summarized his four-day visit there and the advice he gave to the Icelanders in a detailed JARS article (Theqvist 2018). Here, I expand on his observations, as in June 2022, my wife Dorothy and I, along with another couple, spent two weeks circumnavigating Iceland. It was our first time there and apart from visiting many of its scenic locations, I was particularly interested in Iceland's botany and the recent successes Icelandic gardeners were having in growing rhododendrons. This article thus gives a brief overview of Iceland's geography, weather and its botany, refreshing readers of some of the descriptions given by Theqvist (2018), but in addition, showcasing some native plants, Iceland's public gardens, and some private rhododendrons gardens.

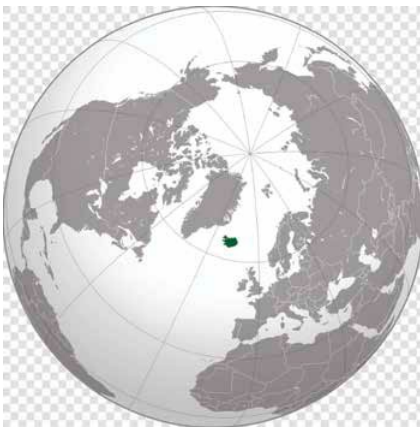


Fig. 1. Location of Iceland in the North Atlantic Ocean. Source: en.wikipedia.org.

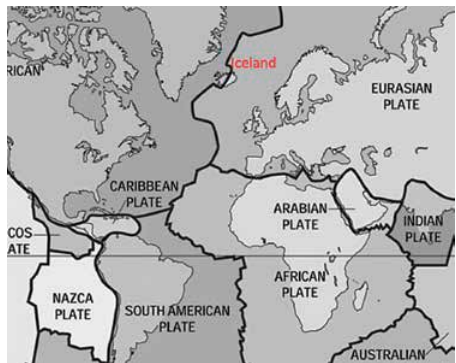


Fig. 2. The Mid-Atlantic Ridge's path through Iceland. <https://commons.wikimedia>

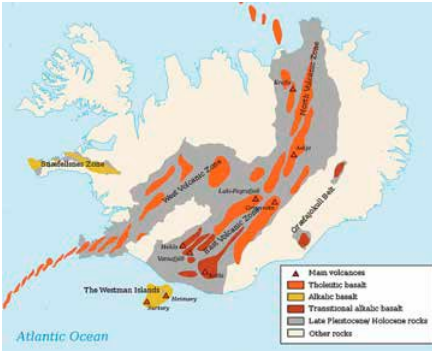


Fig. 3. Areas of volcanic activity in Iceland along the Mid-Atlantic Ridge. Source: en.wikipedia.org



Fig. 4. Iceland topographic map. Dark green and brown = < 500 m, Light green = > 500 m, white = glaciers. Red lines = main highways, and the Ring Road around the country. Source: en.wikipedia.org

**Geography**

As a refresher, Iceland is a Nordic island country in the North Atlantic Ocean (Fig. 1) just south of the Arctic Circle and is the most sparsely populated country in Europe. It is the biggest land mass on top of the Mid-Atlantic Ridge, a divergent tectonic plate boundary (Mid-Atlantic Rift, Fig. 2) that separates the North American and the Eurasian Plates.

Its central volcanic plateau is erupting quite frequently (Fig. 3), in fact as recently as July-August 2022. Its interior consists of an unpopulated plateau characterised by sand and lava fields, mountains, and glaciers, with many glacial rivers that



Fig. 5a. Icelandic waterfall. Unnamed. Photos: Stewart Yee.



Fig. 5b. Icelandic waterfalls. Dynjandi Waterfall. Photos: Stewart Yee.



Fig. 6. Köppen climate types of Iceland. Grey = tundra, green = Subpolar oceanic. Source: en.wikipedia.org



Fig. 7. Akureyri. Photo: Dorothy Jamieson.

flow to the sea through the island's lowlands (Fig. 4). The result are innumerable, spectacular waterfalls as the rivers drop off the elevated plateau (Fig. 5a,b).

Iceland is Europe's second-largest island after Great Britain, being slightly larger than Ireland. The main island covers 101,826 km<sup>2</sup> (39,315 mi<sup>2</sup>), of which 62.7% is tundra (Fig. 6). There are also about 30 minor islands that cover an additional 1200 km<sup>2</sup> (675 mi<sup>2</sup>). Lakes and glaciers cover 14.3% of its surface and only 23% is vegetated (Fig. 4). Its highest elevation is 2110 m (6923 ft) and many fjords punctuate its 4970 km (3088 mi) coastline, which is also where most settlements are situated. Its overall population is about 376,000, and its capital and largest city is Reykjavík, which (along with its surrounding areas) is home to over 65% of the population. Its second largest city is Akureyri (Fig. 7), located on the north coast with a population of about 19,000. Most other coastal settlements each have only 600-2000 residents.

## Volcanism

Iceland is one of the most active volcanic regions on the planet (Fig. 3), and an eruption occurs every four to five years on average. However, the duration of eruptions can vary, from just a few minutes or hours up to months or even years. Recent eruptions have been the notorious Eyjafjallajökull eruption in 2010, which stopped all air traffic over Europe for several days by spewing plane engine-abrasive ash in the air, and more recently in March 2021 and again in August, 2022, near Fagradalsfjall on the Reykjanes Peninsula. The nature of eruptions in Iceland is diverse, from small effusive eruptions where lava flows quietly from fissures and crater rows to large explosive eruptions in ice-covered central volcanos that produce large ash plumes and significant flash-flooding from melted ice. The latter can destroy buildings, roads and bridges, and cover large areas deeply with gravel and sand washed down from the highlands. A major eruption came in the Vestmann Islands in 1963. That eruption buried a fishing town of 5500 inhabitants with ash and lava, and the whole population had to be evacuated

overnight. Another example is the 565 km<sup>2</sup> (218 mi<sup>2</sup>) Eldhraun lava field, the world's largest recorded lava flow, from an eight-month long eruption in 1783-84. The particular eruption, known as Skaftáreldar (the Skaftá River Fires), a 27 km (16 mi) long eruptive fissure consisting of 130 craters on the southwest side of the Vatnajökull Glacier), that created this immense lava field is considered to be among the most poisonous (toxic ash and a widespread sulphuric aerosol cloud) recorded to date. It significantly reduced sunlight for three years and had a huge impact on Iceland. The entire population was nearly forced to evacuate in a mass migration to Denmark due to the resulting disease and famine that killed more than half the island's domestic animals and 25% of the human population. Even much of Europe was affected by reduced sunlight and its impact on agricultural production. In Great Britain, over 20,000 people died and the 1783 summer is known as the Sand Summer due to the fallout of ash and its climate impact. At its peak, about a quarter of the earth's surface was impacted by the aerosol cloud, all land north of 30° latitude.

## Climate

Iceland's coastal climate is subarctic (Fig. 6), and the warm North Atlantic Current (the northern extension of the Gulf Stream beyond Newfoundland) ensures generally higher annual temperatures than in most places of similar latitude in the world. Regions in the world with similar climates include the Aleutian Islands, the Alaska Peninsula, and Tierra del Fuego, although these regions are closer to the equator. Despite its proximity to the Arctic, the island's coasts remain icefree throughout the winter.

Iceland's climate varies between different parts of the island. Generally speaking, the south coast is warmer, wetter, and windier than the north. The Central Highlands are the coldest part of the country and low-lying inland areas in the



Fig. 8. Iceland's regions. Source: orangesmile.com



Fig. 9. Atlantic puffins (*Fratercula arctica*).

north are the most arid. Snowfall in winter is more common in the north than in the south.

The country's highest air temperature recorded was 30.5° C (86.9° F) in 1939 at Teigarhorn on the southeastern coast, the lowest was -38° C (-36.4° F) in 1918 at both Grímsstaðir and Möðrudalur in the northeastern central plateau, while maximum/minimum temperature records for Reykjavík were 26.2° C (79.2° F) in 2008 and -24.5° C (-12.1° F) in 1918. The average temperature for Reykjavík in January has been around 1° C (33.8° F) for many decades. Like much of the world, annual minimum temperatures in recent years are becoming warmer.

Both southwestern Iceland (e.g., Reykjavík) and the ends of the deep fjords on the north coast (e.g., Akureyri) have subpolar oceanic climates (Fig. 6). Minimum monthly average Reykjavík temperatures are -3° C (26° F) in the winter and 13° C (55° F) in the summer. Minimum/maximum monthly average Akureyri temperatures are -6° C (22° F) in the winter and 15° C (59° F) in the summer. Annual rainfall ranges from 300 to 700 mm (12 to 28 in) in the north and from 1270 to 2030 mm (50 to 80 in) in the south, with mountain areas wetter.

What also characterises Iceland are its strong winds, especially in southern areas. Wind speed in the lowlands reaches 65 km/h (40 miles/hr) on 10– 20 days per year, but on upwards of 50 days per year in places in the highlands. Its strongest measured 10-minute sustained wind speed is 225 km/h (140 mi/hr) and the strongest gust was 267 km/h (165 mi/hr). Driving around the country, we frequently saw smaller waterfalls where all the falling water never reached the bottom but was rather blown sideways or even back up over the top of the precipice. Climate road signs often showed both temperature and wind speed to warn travellers of conditions ahead. When you park a car and it's windy, you are advised to park the car facing upwind, so the doors are not whipped back and damaged when they are opened!

Being so far north, day length varies from about 22 hours in late June to two hours of twilight in late December.

## Regional Geography

From a tourist perspective, Iceland has eight regions (Fig. 8), the Capital Region, Southern Peninsula, West, Westfjords, Northwest, Northeast, East and South that are intended to assist with planning a holiday in Iceland, and are therefore primarily geographical, rather than administrative. We visited all of them, and while outside of the Capital region, they all had similarities (lots of grazing sheep, largely treeless landscapes, and large areas covered with Alaska lupins), they were each also unique. Reykjavík in the **Capital Region** is the world's northernmost capital of a sovereign state and has all the characteristics of a modern city, although with a relatively small, folksy downtown surrounded by newer suburbs.

The **Southern Peninsula** of Reykjanes is very active volcanically and has lava

and the mountains of the Mid-Atlantic Ridge in the background. It also has the Keflavik International Airport, hot springs (e.g., Blue Lagoon) and the Álfagjá rift valley, spanned by the Bridge Between Continents (tectonic plates).

The **West Region** is one of the most geologically diverse regions, with the stratovolcano Snæfellsjökull, the crown jewel of Snæfellsjökull National Park.

**Westfjords** is the least populous region (7115 people), lying on the Denmark Strait facing the east coast of Greenland. It is connected to the rest of Iceland by a seven km (four mile) wide isthmus, and is very mountainous, with the coastline heavily indented by dozens of fjords surrounded by steep mountains and cliffs, making roads very circuitous. Its Látrabjarg cliffs (14 km (eight miles) long and up to 440 m (1445 ft) high) are the longest bird cliffs in the northern Atlantic Ocean, with millions of birds, including Atlantic puffins (Fig. 9, *Fratercula arctica*), Northern gannets (*Morus bassanus*), guillemots (Common murre (*Uria aalge*)), and razorbills (*Alca torda*).

**Northwest Iceland** is much gentler and less forbidding than the Westfjords, with undulating meadows dotted with isolated barns and farmhouses.

**Northeast Iceland** is a showcase of volcanic and geothermal landforms surrounding Lake Mývatn and Ásbyrgi Canyon. It also has the Dettifoss waterfall in Vatnajökull National Park, the second most powerful waterfall in Europe, and Akureyri, Iceland's Capital City of the North.

Travelling eastward through the lunar landscape of Möðrudalur on the interior highlands is **East Iceland**, with the fertile valley of Hérað. Its landscape has narrow fjords, jagged peaks, toppling waterfalls, geothermal hotspots, and for Iceland, small lush, recently planted forests. It has a wild population of introduced Reindeer (Caribou, *Rangifer tarandus*) and the spectacular Jokulsarlon Glacier, with its icebergs in a lagoon adjacent to the sea.

**South Iceland**, just east of the Capital Region, has marshlands, bays, cultivated pastures, estuaries and black sand deserts. It is also the location of the Golden Circle, a one to two-day scenic driving loop from Reykjavik, with the Sólheimajökull Glacier, Geysir Hot Springs, Gullfoss Waterfall, Kerið Crater, and Þingvellir National Park (from 930-1844 AD, the historic initial meeting place on the Mid-Atlantic Rift of the world's longest running, still ongoing parliament).

## Botany

When the island was first settled in 874 AD, it was extensively forested, with around 30% of the land covered in trees, mostly the northern birch (*Betula pubescens*) which formerly formed forests over much of Iceland, along with small stands of common aspens (*Populus tremula*), mountain ash (*Sorbus aucuparia*), common junipers (*Juniperus communis*) and other smaller trees, mainly willows (*Salix* spp.). Permanent human settlement greatly disturbed this isolated ecosystem of thin, volcanic soils and its limited species diversity. The original



Fig. 10. A small natural northern birch (*Betula pubescens*) "forest" in Ásbyrgi Canyon, Vatnajökull National Park.



Fig. 11. Icelandic mountains, with no forests.



Fig. 12a. Mountain Avens (*Dryas octopetala*) National Flower of Iceland.



Fig. 12c Heath spotted orchid (*Dactylorhiza maculata*).



Fig. 12f. Wood cranesbill (*Geranium sylvaticum*).

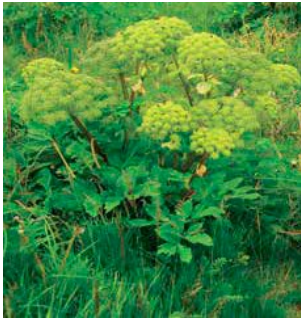


Fig. 12b. Angelica (*Angelica archangelica*).



Fig. 12g. Pink Creeping Thyme (*Thymus praecox* subsp. *arcticus*).



Fig. 12e. Perennial Cornflower (*Centaurea montana*).



Fig. 12d. Marsh marigold (*Caltha palustris*).



Fig. 12h. Woolly fringe moss (*Racomitrium lanuginosum*) on lava.

birch forests were heavily exploited by medieval Vikings and their descendants over the centuries for firewood and timber. Deforestation, climatic deterioration during the Little Ice Age (1500-1850 AD), and overgrazing by livestock (cattle and sheep) imported by the settlers has caused a loss of critical topsoil due to erosion. The sheep culture is deeply embedded in Icelandic heritage and the erosion effects of open range grazing on the landscape are only being slowly recognized by farming communities.

The environmental consequence today is that many farms have been abandoned and three-quarters of Iceland's area remains degraded by soil erosion. Today, only a few small birch stands (Fig. 10) remain in isolated reserves and while the planting of new forests has increased the number of trees of many species, often alien ones, the forested result remains far less than the extent of the original forests. Only about 2% of the land is now covered by forests of which about 0.5% are newly planted.

Vegetation does not extend above about 300 m (1000 ft), so with a lack of forests, the hills and mountains show all their geological details, and rivers, streams and waterfalls are readily visible from a great distance (Figs. 5,11). Excluding mosses, lichens, and algae, Iceland has about 490 plant species: three endemic, and about 100, 10 and 150 clearly European, American and circumpolar, respectively ([http://www.iceland-nh.net/plants/background\\_plants1.html](http://www.iceland-nh.net/plants/background_plants1.html)). These consist of heathers and a few other low evergreen plants, grasses and a variety of small herbaceous species (Fig. 12). By far the most dominant, visual species in June and early July is the alien, vibrant purple Alaska lupin, *Lupinus nootakatensis*, brought to Iceland in 1945 by Hákon Bjarnason, the representative of a committee tasked to select plants that might do well in the harsh Icelandic landscape as a means both to add nitrogen to the soil and to function as an anchor for organic matter. In this respect it has done exceptionally well. However, although in places a monoculture (Fig.13), not a single native species of plant has been lost due to alien imports to date.

## Public Gardens

There are two main public botanical gardens in Iceland, one in Reykjavik and the other on the north coast in Akureyri. The Reykjavik Botanical Garden was founded in 1961 and is run by the City of Reykjavik. Its main role is to conserve plants for education, research and delight (Fig. 14a-f). Its Director is Hjörtur Þorbjörnsson, and he and Vilhjálmur Lúðvíksson kindly toured us around its 4.7 ha (11.6 acres), which includes about 5000 accessions of 3000 taxa in eight plant collections. Of those, they have 45 living accessions of 35 rhododendron taxa and cultivars (Table 1A). The collection is thus very small, and a number of rhododendrons there seemed to be stressed (Fig. 14f). They add no amendments to the soil for rhododendrons, and do not use garden soils that have added lime. Hjörtur noted

that the soil in the Botanical Garden is quite peaty but also wet and cold, so is not ideal for rhododendrons. Staff thus try to lift the borders when beds are made, and they mulch, either with compost or leaves.



Fig 12i. Woolly willow (*Salix lanata*). and J. Alaska lupin.



Fig. 12j. Alaska lupin (*Lupinus nootkatensis*) closeup.

The Akureyri Botanical Garden (Lystigarðurinn Akureyri), the world's second-most northern botanical garden at 65.68° N, has a similar collection of rhododendrons, with 39 rhododendron species and hybrids growing in the garden, represented by 63 living specimens. They were growing in raised beds (Fig. 15a,b) and were in generally good condition (Fig. 15c,d,e), perhaps because of better soil and being on a slope, which allows colder air to flow downwards and away from the garden. Nothing is added to the acidic soil in the rhododendron beds apart from softwood mulch when required and the rhododendrons are watered sparingly throughout the drier months.

We arrived in Akureyri late in the day, but because the day length in June was about 22 hr, I was still able to explore the garden on my own late in the evening and take photos. Unfortunately though, this prevented me from meeting Travis Prymr Heafield, the garden's



Fig. 13. A monoculture of the Alaska lupin, *Lupinus nootkatensis*.

botanist, but through Vilhjálmur I was able to contact him, and he kindly sent me the names of rhododendrons they are currently growing (Table 1B). There were a further approximately 100 species/cultivars tried in the garden that did not survive.

The Akureyri Public Park was first opened in 1912 and the botanic section was added in 1957. The park has been enlarged three times



Fig. 14. Reykjavik Botanical Garden. a) Plantings of different herbaceous plant species.



Fig. 14b. Rock garden.



Fig. 14c. *Meconopsis betonicifolia*, the Himalayan blue poppy.



Fig. 14d. *Dodecatheon pulchellum*, the shooting star.



Fig. 14e. Two of its 35 rhododendron taxa, *R. degronianum* subsp. *yakushimanum* 'Dreamland' (left) and 'Blumeria' (right).



Fig. 14f. *R. oreodoxa* var. *fargesii*.

Fig. 14a-f. At the Reykjavik Botanical Garden.

since 1912 and is now about 3.6 ha (8.9 acres) and lies 40-50 m (130-165 ft) on a slight slope above the fjord near midtown.

The aim of the botanical garden is to grow trees, shrubs and perennials (e.g., Fig 16 A-D) in the demanding climate of Northern Iceland, which is characterized by pronounced seasonality of temperature and a greatly variable day length. Akureyri is situated near the relatively sheltered end of Eyjafjord (Fig 6), which is one of the longest fjords in Iceland and thus provides a favourable microclimate for plant growth. Beside the 430 native species, there are 6600 alien taxa growing in the garden. The garden is an International Plant Exchange Network (IPEN) member and is active in seed-exchange, public information, education and recreation.



Fig. 15. Akureyri Botanical Garden. a) Rhododendrons in raised beds.



Fig. 15b. Rhododendron beds in a sloping garden.



Fig. 15c. 'Jackwill'.



Fig. 15d, 'Scarlet Wonder'.



Fig. 15e Tigerstedt Group.



Fig. 16. Akureyri Botanical Garden. A) Display garden, B) Rock garden..

**Table 1. Rhododendron species and cultivars currently growing in the A. Reykjavik Public Garden (Hjörtur Þorbjörnsson) and B. Akureyri Public Garden (Travis Þrymr Heafield).**

**A.**

'Blumeria'	<i>R. catawbiense</i> 'Grandiflorum'
'China Boy'	<i>R. catawbiense</i> 'Roseum Elegans'
'Cunningham's White'	<i>R. caucasicum</i>
'Gartendirektor Glocker'	<i>R. dauricum</i>
'Gartendirektor Riegerer'	<i>R. degronianum</i> subsp. <i>heptamerum</i>
'Vigdís'	<i>R. mucronulatum</i>
<i>R. brachycarpum</i>	<i>R. myrtifolium</i>
<i>R. brachycarpum</i> subsp. <i>tigerstedtii</i>	<i>R. occidentale</i>
[= subsp. <i>brachycarpum</i> ]	<i>R. oreodoxa</i>
<i>R. degronianum</i> subsp. <i>yakushimanum</i>	<i>R. oreodoxa</i> var. <i>fargesii</i>
'Dreamland'	<i>R. purdomii</i>
<i>R. degronianum</i> subsp. <i>yakushimanum</i>	<i>R. racemosum</i>
'Koichiro Wada'	<i>R. schlippenbachii</i>
<i>R. fortunei</i>	<i>R. smirnowii</i>
<i>R. hirsutum</i>	<i>R. ungerii</i>
<i>R. impeditum</i>	<i>R. unknown</i> (3).
<i>R. luteum</i>	
<i>R. mole</i>	
<i>R. calendulaceum</i>	
<i>R. catawbiense</i>	

**B.**

Fraseri Group	'Ramapo'
'Aksel Olsen'	'Rosa Mundi'
'Cassata'	'Scarlet Wonder'
'China Boy'	'Sun Fire'
'Christmas Cheer'	<i>R. brachycarpum</i> 'Roseum'
'Christmas Cheer'	<i>R. calostrotum</i> 'Rock's form'
'Cunningham's White'	<i>R. campylocarpum</i>
'Cunningham's Snow White'	<i>R. catawbiense</i>
'Elvira'	<i>R. caucasicum</i>
'Ems'	<i>R. fauriei</i> (= <i>R. luteum</i> )
'Eskimo'	<i>R. ferrugineum</i>
'Goldbukett'	<i>R. ferrugineum</i> X <i>R. hirsutum</i>
'Helsinki University'	<i>R. hirsutum</i>
'Jackwill'	<i>R. japonicum</i>
'Lee's Dark Purple'	<i>R. myrtifolium</i>
'Maharani'	<i>R. nitidulum</i> var. <i>omeiense</i>
'Mikkeli'	<i>R. oreodoxa</i> var. <i>fargesii</i>
'Norfolk Candy'	<i>R. smirnowii</i>
'Percy Wiseman'	<i>R. watsonii</i>



Fig. 16. Akureyri Botanical Garden. C) *Lewesia* planting, and D) *Paeonia*.

### Private Gardens

We were able to visit two private gardens, one about 60 km (37 miles) north of Reykjavik and the other about 50 km (30 miles) east. The former is the impressive 7 ha (17 acre) garden on 15 ha (37 acre) of land of Sólveig Jónsdóttir and Ólafur Jónsson (Fig. 17), probably the most experienced amateur collectors and growers of



Fig. 17. Sólveig Jónsdóttir and Ólafur R. Jónsson.



Fig. 18a. Rhododendrons in Sólveig and Ólafur's cottage garden.



Fig. 18b. More rhododendrons in the cottage garden.



Fig. 18c. Rhododendrons in their home garden

**Table 3: The best performing rhododendrons in Sólveig and Ólafur's garden (Sólveig Jónsdóttir).**

'Dagmar'	'Virginia Richards'
'Eskimo'	<i>R. degronianum</i> subsp
'Fantastica'	<i>yakushimaum</i> 'Karminkissen'
'Ninotschka'	<i>R. degronianum</i> subsp.
'Rabaatz' (slightly sensitive to wind)	<i>yakushimaum</i> 'Sonatine'
'Silver Jubilee'	<i>R. oreodoxa</i> var. <i>fargesii</i> (sensitive to
'Silberwolke'	spring frosts)

rhododendrons in Iceland. Located on a treeless plain, they built their cottage in 1999, but first had to plant trees to create a “forest” to provide a wind break and shade before starting to plant rhododendrons in 2011. Their climate's minimum winter temperature is now about -12° C (10.5° F). The average temperature in the winter is now about -4 to -2° C (25 to 28.5° F).

In plantings, they use both local soil materials and peat, and before planting, loosen the soil around the hole for better aeration. They dig 50 cm (20 in) wide holes 40 cm (16 in) deep and then add a mixture of one part one-year-old horse manure, one part pine needles and one part wood chips, which creates a nice acidic mix. They mulch with pine needles almost every year. Among the approximately 250 rhododendrons they now grow in clearings in their forest (Fig. 18a,b), they have found those listed in Table 3 to be hardy and bloom best. They grow about another 50 rhododendrons at their home in Hafnarfjörður, a southern suburb city of Reykjavik (Fig. 18c).

The second private garden we visited belongs to Ólafur Njálsson (Fig. 19), which



Fig. 19. Ólafur Njálsson: A) with 18-year-old rhododendrons (touching *R. oreodoxa* var. *fargesii*) in his garden adjacent to his Náthagi Nursery. B) with some five-year-old-plantings in his test garden (in three beds there are around 100 1- to 5-year-old cultivars) to see how new species/cultivars survive.



Fig. 20: Rows of newly imported Danish rhododendrons for sale his Nátthagi Nursery.

is adjacent to his Nátthagi Nursery with its great variety of imported Danish rhododendrons (Fig. 20), as there is no substantial rhododendron propagation in Iceland. He is continuously testing many of these imported plants in his garden to see how they perform over time (Fig. 19b). He started his nursery about 50 km (30 miles) east of Reykjavik in an area which was open tundra at the time, so like Sólveig, his first job was to plant trees to create a “forest” windbreak. Consisting of many different tree species, with *Populus trichocarpa* (poplars, various clones); *Picea sitchensis*, *glauca* and *engelmannii* (spruce); *Pinus contorta* and *uncinata* (pine); *Alnus sinuata* (alder), *Larix decidua* (larch), and *Betula pubescens* (birch) as the main species, the “forest” took 10-20 years for parts of it to become dense enough to provide sufficient shelter for his nursery plants and planted rhododendrons (Fig.19).

He bought his 5.6 ha (13.8 acres) land in 1987 and began planting trees in 1988. He bought 10 ha (24.7 acres) more in 1989 and an additional 7.4 ha (18.3 acres) in 2010, for a total now of 20.3 ha (50 acres). His property is located a few kilometres south of a moderate-sized mountain, which greatly influences the garden’s temperature and precipitation. In some winters he has very little snow from the mountain and Iceland’s central highlands while in others, there has been up to 3.5 m (11.5 ft) of snow! As the snow melts, it becomes heavy and this can damage his snow-buried rhododendrons, which has happened.

In 2022, he was selling about 60 different species and hybrids (Fig. 20), but could offer about 300 according to his experience with them to date. Every second winter is almost free of snow, but instead there are then temperatures down to -10 to -12° C (10-14° F), with frozen soil. The prevailing dry wind gusts are from the highlands, and the most damaging period for evergreen plants is from January to May. The strong spring sun makes things worse for plants with evergreen leaves as they need water from their frozen roots. Coming from a winter with very little sunlight because of a shortened day length, the increasingly bright sunlight can then burn evergreen leaves, resulting in a yellow-green colour and brown tips. If

Icelandic gardens are not sheltered enough from winter winds by tree plantings, windscreens must be set up in November and left until after the middle of May. Screens must be open at the top so the rhododendrons can get at least some winter light for photosynthesis. Iceland's daylength in early winter is twilight for only a few hours, while in contrast, June daylight is 22 hr, with two hours of twilight.

## Summary

Iceland is a remarkable country—amazing vast landscapes, friendly people that seem to all speak English fluently, and generally great facilities for tourists. I qualify this slightly, as away from Reykjavik and Akureyri, towns are quite small (about 600-2000 people) with relatively little available accommodation and restaurants. However, our travel agent had all our accommodations prebooked, so we had no problems with places to stay. Prices are higher than in North America in all aspects (fuel (eg., gas at about \$CDN 3.45/l (\$US 10.35/gal), accommodation, meals, rental cars, etc.), but like travel in Europe proper, well worth the added cost to visit this special country. We traversed the Ring Road around the country, with a few days extra to see the Westfjords region more extensively, and this required about two weeks to do comfortably, travelling an average of about 270 km (160 miles) per day, for about 3800 km (2280 miles) in total.

The vegetation, apart from the introduced lupins, was mostly alpinelike, with few plants above 30 cm (one foot) high (Fig. 12) except occasionally some native shrubs and trees in sheltered locations (Fig. 10) and the few locations where alien trees had been planted (e.g., in Reykjavik and in a new forest near Egilsstaðir, East Iceland). Sheep were pretty much everywhere, and with little fencing, in the warmer months can be frequently observed either adjacent to or even on roads. There are so many unique geological features to experience and fantastic landscapes to pass through that it truly is one of the more magical countries to visit.

Kristian Theqvist (2018) described in detail many of the cultural challenges in growing rhododendrons in Iceland, but concluded that “it would be possible to grow most of the temperate zone rhododendrons in Iceland if they are provided with proper wind shelter.” In this I concur, at least with respect to locations in the subpolar oceanic climatic zone near the ocean.

From the rhododendron culture data I received, there are still challenges to rhododendron culture in Iceland, but as shown in the private gardens of Sólveig Jónsdóttir and Ólafur Njálsson, they can be overcome. Plant collections in public gardens, such as rhododendrons, are often placed in specific limited locations to best showcase them, which may not always be best for the survival of the various species and cultivars being presented. The best successes by gardeners are typically achieved by dedicated people that can carefully monitor the performance of their plants, and make timely culture adjustments when necessary.

Rhododendrons planted in both the country's public gardens were each part of a massive collection of mostly alien plants, and so it is likely not possible for staff to give a lot of attention to the specific culture needs of any specific group of plants. As pointed out by Kristian, public gardens are somewhat show gardens and are primarily a beautiful place where citizens can spend their leisure time. As such, they are perhaps not always the best indicators of what specific garden plants can actually be successfully cultured in their region.

### **Acknowledgements**

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*Glen Jamieson is the District Director of District 1 (British Columbia) and a member of Mt. Arrowsmith Chapter. He is also the editor of JARS.*

# Development of New Satsuki Azalea Hybrids in Japan (The ‘Suisen’-group)

Mark Nijland  
Wageningen,  
Netherlands



Photos by author  
except as noted.

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Exactly 20 years ago, Jim Trumbly wrote an article titled “The Changing Fashion of Satsuki,” appearing in the Summer 2001 edition of *The Azalean* (Trumbly 2001a). In this excellent article, Jim covered many aspects of Satsuki azaleas, including the hybridization of new varieties. Two decades have passed and today

many new Satsuki azalea varieties have been developed by Japanese Satsuki enthusiasts. Last year, I bought the newest release of the Japanese Satsuki dictionary (Fig. 1.) This book is a catalog of Satsuki azalea that describes varieties using a picture and a description in Japanese characters. This latest edition has a total of 1400 varieties. This is an overwhelming number of varieties, with many of them hybridized in the last few decades. Almost all will be very unfamiliar to many western azalea enthusiasts. In this article, I will discuss the development of new Satsuki varieties in Japan by focusing on the role of the cultivar ‘Suisen’. The availability of most of the varieties discussed is limited outside of Japan. However, I very much hope that by introducing the reader to these new Satsuki varieties, I am doing more than familiarizing my audience with difficult challenges, if not impossible, to obtain azalea varieties. Maybe the



Figure 1. Japanese 2020 Satsuki dictionary containing 1400 varieties, released by Tochinoha Shobo and available on Amazon.co.jp. Source: Kaboku center at Kanuma, <https://kaboku.or.jp/satsuki/>

knowledge of the existence of these new azalea breeds will help improve their availability outside of Japan. In any case, I believe that at least the reader can enjoy the pictures provided in this article.

### Improved Satsuki Azalea Availability in Europe

As a European, I look with a bit of envy at the popularity of evergreen azaleas in both Japan and North America. Yes, evergreen azaleas have a long history here and European plant breeders also produced some excellent varieties. However, most of them are small-flowering Kurumetype varieties, ideal for landscaping purposes. A few nurseries here in Europe are still breeding new varieties but it feels as if this does not compare to the richness found in North America, and certainly not to the recent hybridization efforts in Japan. My main interest is in Satsuki azaleas, both for their attractive foliage and their multi-colored patterned flowers. Satsuki azaleas are compact-growing azaleas that display their flowers against a background of fresh new leaves. Their flowering period is late (early blooming in Satsuki cultivars is early to mid May in most climates. Thus, “early” in the Satsuki still means they bloom after most other evergreen azaleas start blooming), and Satsuki open their flowers more gradually. Back when I was a college student in 2010, I learned about the huge range of Satsuki cultivars in existence. First through internet sources like the ASA website and picture database, then through Callaham’s (2006) excellent book and finally, I bought the 2010



Figure 2. ‘Aika’\*, award winner in the “meika” class at the 2014 Kanuma Satsuki Festival. Photo: Kanuma City Kaboku Center, <https://kaboku.or.jp/satsuki/>

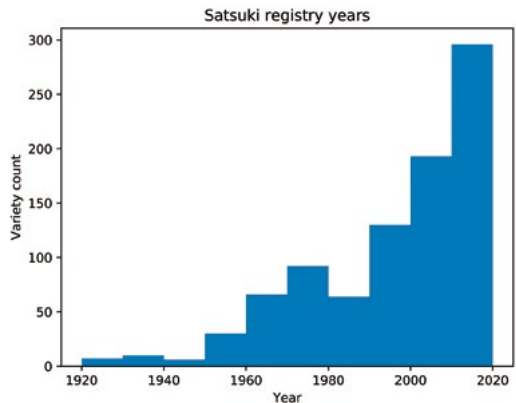


Figure 3. Number of new Satsuki varieties registered by decade in the 2020 Satsuki Dictionary. (Mark Nijland)

Satsuki dictionary that describes 1200 varieties. It was a bit strange to want to be involved in a hobby of growing plants of which you knew thousands existed, but none were really available for me. I could look at all these pictures but the Satsuki hybrids shown were not for sale anywhere in Europe. Back in 2010, it was really hard to obtain any Satsuki azaleas. The only people in Europe growing Satsuki azaleas were bonsai hobbyists, who had to obtain their Satsuki bonsai by importing them from Japan. This was an expensive endeavor, and only worthwhile for large specimens often valued at a several hundred or even thousands of euros.

### **Old Satsuki Varieties as Landscape Plants in the USA**

In contrast, Satsuki varieties in the form of reasonably priced garden plants do seem to be somewhat available in the USA. However, the varieties of Satsuki azaleas available there do not seem to have significantly changed in the last ten years. Nurseries like White's (Gaithersburg, MD) and Nuccio's (Altadena, CA) produce mainly old to very old Satsuki cultivars that were generally developed in the 1960s. These are excellent, but most of them have grown out of favor in Japan. There, a few of the old varieties have become classics, especially true for varieties connected strongly to more traditional bonsai where the trees are old, the trunks are fat, and the "nebari" (roots) are very prominent. These bonsai are exhibited outside of the flower season with 'Osakazuki', 'Korin', 'Kozan', and 'Kinsai' [= Kin-no-sai'] the most popular varieties at these shows (Satsuki Kenkyu Magazine 2019).

### **Importance of Flower-Display Satsuki in Japan**

In contrast, there are the flower display Satsuki exhibitions (Fig. 2). Very often, these Satsuki are styled as "meika" (銘花), meaning famous flower) trees. These are tall, potted, single-trunked, conical-shaped azalea plants, sometimes with S-shaped curves, and somewhat resembling a Christmas tree. The meikashape is ideal for displaying varieties with variegated multi-colored flowers. Here, the challenge is to get a good distribution of different flower patterns. This then demonstrates the full range of color possibilities of a specific variety. Besides the meika-style, thin single and multi-trunked azalea bonsai are also popular. Additionally, each year azalea breeders also compete for several best new Satsuki variety awards. When the priority is on the flowers, a Satsuki bonsai does not require an ancient tree with a single fat trunk. Instead, one can buy a plant that is just a few years old and design it into some shape over the course of a few years. In this case, new Satsuki varieties have the strongest impact. New varieties combined with the meika-form of bonsai allow azalea enthusiasts to buy relatively cheap and young plants. These plants can then be turned into a more casual style of bonsai, to be enjoyed especially when in flower. I think this aspect of the Satsuki azalea bonsai explains the large number of new Satsuki varieties currently being produced in Japan.

## Explosion of New Varieties in Japan

The 2020 Satsuki dictionary lists the year in which a variety was registered. Fig. 3 displays a bar chart that visualizes this registration year data, demonstrating that there seems to be an accelerated rate of new variety development. However, these statistics are somewhat biased because older varieties lack a registration date while

some middle-aged varieties may have been dropped from the 2020 edition if they never gained enough popularity.

In contrast, a Satsuki dictionary usually contains the new varieties that were registered and exhibited in recent years. While these new varieties are included, since they are so new, it is not yet known how popular they will become and if nurseries will decide to mass produce these Satsuki and make them available to the general Japanese audience. All this made me wonder

about the breeding goals and strategies. How much more progress could potentially be made by making the right crosses? The Japanese are focused very strongly on producing new or rich flower patterns. They generally do not cross Satsuki with other cultivar groups or species different from *Rhododendron indicum*. Very occasionally, Kurume or *R. kiusianum* hybrids are used. Often, both parents are very similar to types of Satsuki azaleas. Sometimes one parent is a new flashy flower-oriented variety, while the other is a traditional and time-tested variety with more modest flowers, a solid bonsai tradition, and likely a superior plant habit.

## Dominant Role of ‘Suisen’ in the Development of Large-Flowering Satsuki Varieties

In all the breeding carried out in the past three decades, one single cultivar dominates. The name of this variety is ‘Suisen’ (翠扇, meaning green fan). ‘Suisen’ is a cross of ‘Komei’ with ‘Reiko’, registered in 1975 by Kikuro Shionotani (塩野谷喜久郎) (Fig. 4). It is a white star-shaped flower with red stripes and pink or red selfs. The green-yellowish blotch is relatively distinct and may explain the name. The leaves are on the larger side for a Satsuki, and somewhat rounded when compared with *R. indicum*, ‘Kozan’ or ‘Osakazuki’, but are not as rounded as maruba Satsuki like ‘Gumpo’ and ‘Izayoi’.



Figure 4. ‘Suisen’, the most popular breeding parent among modern Satsuki azaleas. Photo by Jim Trumbly.

## Thicker Flower Petals as the Key Quality of New Satsuki Cultivars

While ‘Suisen’ is definitely very attractive-looking, this in itself does not fully explain the success of ‘Suisen’ as a breeding parent. I believe that the key to ‘Suisen’ is that it is a tetraploid (Sakai et al. 2006). Let me explain. Evergreen azaleas usually carry two pairs of chromosomes, just like us humans. However, in some types of plants, it is fairly common for each cell to contain more than just two copies of their entire genetic code. This is referred to as polyploidy. The more copies of the genome there are in each cell, the larger the cell has to be, and larger cells lead to thicker tissues and larger flowers. This is often desirable in plants—both for food crops and for ornamentals. Larger flowers and especially thicker, and thus more durable, petals are very desirable traits in azaleas. It turns out that triploids in particular, where there are three copies of each chromosome, usually have the best ornamental traits. Diploid azaleas have 26 chromosomes, i.e., 13 pairs (Heursel 1987). Therefore, triploids have 39 chromosomes and tetraploids have 52. Triploid flowers are usually larger and have thicker petals, compared to tetraploids. Furthermore, triploid plants usually have impaired fertility, which seems to enhance bloom times since flowers usually fade after fertilization has occurred. Gartrell used the tetraploid ‘Gettoku’ (= ‘Getsutoku’) with great success in producing some excellent Robin Hill Azaleas (Nosal 1980). Why is ‘Suisen’ then special, as there have been many earlier tetraploid Satsuki. One reason may be the smooth neater flower shape of ‘Suisen’ over the ruffled (“namiuchi”, 波打) flowers of ‘Gettoku’ and its Robin Hill offspring. Many old Satsuki cultivars also have ruffled flowers, such as ‘Asahi-no-hikari’, ‘Gyoten’, or ‘Gumpo’. However, almost none of the new cultivars registered in Japan have this trait. Smooth, neat flowers seem to be in fashion today among the Japanese Satsuki crowd. This matches the “changing fashion” as explained by the Jim Trumbly (2001) article in *The Azalean*.

## The Sports of ‘Suisen’ and Their Origins

Like every major Satsuki variety, ‘Suisen’ also has many sports. ‘Koyo’ is a solid red sport that retains the ability for white flowers to reappear (Fig. 5). ‘Miharu’\* is the pink version of ‘Suisen’. The Japanese refer to this as a “jiai” sport, referring to pink as an inbetween color. ‘Shin Koyo’\* is a newer sport similar to ‘Koyo’ and throws white flowers even more often, which allows ‘Shin Koyo’\* to have a more equal mix of both white and red flowers on the same plant. ‘Yumemonotagari’\* is a ‘Suisen’ sport with more rounded petals and less of a star-shaped flower. ‘Eiga-no-homare’\* is a Satsuki variety very similar to ‘Suisen’ and besides looking very similar, it also has the same parents and the same hybridizer. Through communications with Kenichi Naoi, the owner of Naoki Satsuki Garden in Shioya, Tochigi, I learned that ‘Suisen’ could actually be a sport of ‘Eiga-no-homare’\*. ‘Eiga-no-homare’\* is described as having an ordinary leaf shape, while in ‘Suisen’, the leaves are

more rounded and larger. Furthermore, this also results in thicker petals. This mutation or sport has also been seen in other azaleas, where this change in leaf shape is also accompanied with thicker petals. However, this mutation is also said to reduce the strength and vigor of the variety a little bit.

Jim Trumbly informed me that he recalls that ‘Suisen’ used to be described as having both the normal and the narrow leaves. In that case, maybe old ‘Suisen’ had both characteristics, but modern ‘Suisen’ and ‘Eiga-no-homare’\* both represent the pure round leaf character and the normal leaf character, respectively. In a scientific paper by Sakai et al. (2006), ‘Eiga-no-homare’\* has been reported as a diploid. Therefore, I believe ‘Suisen’ is a mixoploid sport of ‘Eiga-no-homare’\*, where most of the ‘Suisen’ tissues are tetraploid.



Figure 6. ‘Juko’, one of the most influential Satsuki varieties. Relatively fast-growing with small, dark green leaves but relatively large flowers. Used in plant breeding to produce new types of flowers, specifically with softer pastel colors.



Figure 5. ‘Koyo’\*, a sport of ‘Suisen’ with mainly solid red flowers. Source: Tochinoha Shobo Staff Blog, <http://staff.tochinoha-shobo.com/?eid=4306>

### **Breeding New Azalea by Hybridizing ‘Suisen’ with Other Popular Satsuki**

The popularity of ‘Suisen’ resulted in it being crossed with basically every other major Satsuki variety. Maybe the best example are crosses with ‘Juko’, which was the dominant flower display variety before ‘Suisen’ was obtained (Fig. 6). These crosses have resulted in



Figure 7. ‘Meisui’\*, cross between ‘Suisen’ X ‘Juko’.

several new varieties, one of the most famed of these is 'Meisui'\* (Fig. 7). Like 'Suisen', 'Juko' also has many sports with 'Karenko'\* being one of the most popular. 'Karenko'\* is a two-color sport of 'Juko', and 'Byakuren'\* is a white-base flower sport of 'Karenko\*'. Several new varieties were obtained as the result of crossing 'Koyo' with either 'Karenko'\* or 'Byakuren\*'. One of these varieties is 'Shinsei'\* [not the sport from 'Chitose-nishiki'], which is very similar to 'Meisui' (Fig. 8). 'Shinsei'\* is the result of a cross of 'Koyo' with 'Byakuren\*'. Its flowers are slightly smaller than 'Meisui\*', but it makes up for this through its pastel colors and elegant patterns. Another variety I want to briefly mention is 'Sachi-no-kagayaki'\* (Fig 9), which has white centers, and usually six or seven petals that are rather pointy. Besides 'Suisen' and 'Juko', 'Asuka'\* (Fig. 10) is another more recent and very influential Satsuki variety. It is known for a deeper purple color and large flowers with narrow but somewhat blunt-tipped petals. 'Asuka'\* has produced



Figure 8. 'Shinsei', cross between 'Koyo' and 'Byakuren\*'. Source: Nagano Satsuki En, <http://naganoSatsukien.blog66.fc2.com>



Figure 9. 'Sachi-no-kagayaki\*', cross between 'Miharu'\* X 'Karenko'. Six or seven pointy petals. Source: Nagano Satsuki En, <http://naganoSatsukien.blog66.fc2.com>.



Figure 10. 'Asuka\*', cross between 'Gekkeikan' X 'Shunsui\*'. Rounded. Source: Nagano Satsuki En, <http://naganoSatsukien.blog66.fc2.com>.



Figure 11. 'Saishun\*', cross between 'Suisen' X 'Asuka\*'. Vivid contrast between white background, red stripes and yellowish blotch. Source: Nagano Satsuki En, <http://naganoSatsukien.blog66.fc2.com>.



Figure 12. 'Suika'\*, cross between 'Asuka'\* X 'Suisen'. Petals overlap makes the flower appear more organic. Source: Nagano Satsuki En, <http://naganoSatsukien.blog66.fc2.com>.



Figure 13. 'Aika'\*, pink sport of 'Meguriai'\* known for its different shades of pinks and reds. Photo: MiniSatsuki.com.



Figure 14. Moeka'\*, cross between 'Suisen' X 'Ai-no-tsuki'\*, is now a very popular and easy to grow variety. Photo: MiniSatsuki.com.



Figure 15. 'Sanshimai'\*, sport of 'Moeka'\*, is known for its more vivid carmine red stripes. Source: Nagano Satsuki En, <http://naganosatsukien.blog66.fc2.com>.

plenty of sports and seedlings, which is beyond the scope of this article. The variety 'Saishun'\* (Fig. 11) was obtained by crossing 'Suisen' with 'Asuka'\* while 'Suika'\* (Fig. 12) was produced from 'Asuka'\* X 'Suisen'.

### **New Varieties Obtained by Crossing 'Kogetsu' with 'Suisen'**

Beyond crosses with 'Juko', 'Asuka', and their sports, the following are some other noteworthy offspring of 'Suisen'. Together with 'Kogetsu', it has produced 'Meguriai'\*. 'Kogetsu' is among the most famous red-white mix multi-colored Satsuki and few varieties can beat a good 'Kogetsu' in terms of richness in flower patterns. 'Meguriai'\* seems to be one of the most common 'Suisen' offspring around. I think it is available in the USA. 'Aika'\* is the pink "jiai" sport of 'Meguriai'\*, which is arguably even more attractive (Fig. 13).

Luis Rodríguez Míguez indicated that 'Aika'\* is one of the showiest Satsuki varieties. He runs MiniSatsuki Nursery in France, where they import Satsuki varieties from Japan and propagate cuttings for the EU market. They are careful to make sure the flowers patterns stay true to the variety. He stated that "For us, 'Aika'\* has a strong growing habit and over the years it has become one of our favorites among the pink and salmon-tinted varieties. Once in fullbloom, the pink and rich red patterns make it really eye-catching."

#### Four More Showy Violet, Carmine, and Red Satsuki Varieties that are Easy to Grow

Another very common variety from the 'Suisen'-system is 'Moeka'\* (Fig. 14), produced by crossing 'Suisen' with 'Ai-no-tsuki'\*. An early bloomer, 'Moeka'\* is known for being very reliable and easy to grow, given the right climate. 'Sanshimai' is the two-color sport of 'Moeka'\* and has superior flower patterns. Akio Nagano is the owner of Nagano En, a Satsuki nursery in Fukuoka, Japan. He gave me the following description of 'Sanshimai'\*: "Judging from pictures, 'Moeka'\* and 'Sanshimai'\* look similar. However, if you see 'Sanshimai'\* with your own eyes, the difference is obvious (Fig. 15) and one starts to feel sorry for 'Moeka'\*." One of Mr. Nagano's customers bought a 'Sanshimai'\* and after seeing the flowers commented "'Sanshimai'\* is on a different dimension of beauty." (Akio 2016). Mr. Nagano has been a longtime member of the Fukuoka branch of the Japanese Satsuki Society, and his trees have been featured in Satsuki Kenkyu Magazine.

It seems 'Sanshimai'\* is able to produce a wider range of both colors and patterns. Here lies also the challenge. Not every individual plant is equally able to produce flowers with a full and elegant range of colors and patterns. This is especially true with two-color blooming varieties like 'Sanshimai'\* and 'Karenko'.



Figure 16. 'Satsukibare'\* , cross between 'Suisen' X 'Reiko'. Note the large number of tiny red spots. Source: Nagano Satsuki En, <http://naganosatsukien.blog66.fc2.com>.



Figure 17. 'Seiten'\* , a cross between 'Suisen' X 'Gyoko' has very large (> 10 cm (4 in)) flowers. Source: Nagano Satsuki En, <http://naganosatsukien.blog66.fc2.com>

Some individual plants truly stand out in their ability to produce rich and well-distributed patterns. By taking cuttings from these special plants, the odds of obtaining new plants with similarly good flowers is much improved (see Trumbly 2001b). Mr. Nagano also laments that even his best digital camera is not able to capture the true beauty of these flowers. However, I feel that his pictures are some of the best Satsuki flower pictures I have seen, and Mr. Nagano graciously gave

English name	Japanese characters	Seed parent	Pollen parent	Flower size	Bloom time	Registration year
'Suisen'	翠扇	Komei	Reiko	large (8-10 cm)	midseason	1975
'Koyo'	煌陽	-	-	large (8-10 cm)	midseason	1992
'Juko'	寿光	Kotobuki	Gyoten	medium (5-9 cm)	late	1971
'Meisui'*	明扇	Suisen	Juko	large (8-10 cm)	midseason	2001
'Shinsei'*	新生	Koyo	Byakuren	very large (10-12 cm)	very late	1999
'Asuka'*	明日香	Gekkeikan	Shunsui	large (8-10 cm)	early	2002
'Sachi-no-kagayaki'*	幸の輝	Miharu	Karenko	medium (5-9 cm)	midseason	2009
'Suika'*	翠香	Asuka	Suisen	large (8-10 cm)	midseason	2003
'Saishun'*	彩春	Suisen	Asuka	large (8-10 cm)	midseason	2005
'Meguriai'*	めぐり逢い	Suisen	Kogetsu	medium (5-9 cm)	midseason	1993
'Aika'*	愛花	-	-	medium (5-9 cm)	midseason	2005
'Seiten'*	晴天	Suisen	Gyoko	very large (10-12 cm)	midseason	2007
'Satsukibare'*	五月晴	Suisen	Reiko	large (8-10 cm)	late	2004

Table 1: Overview of all the pictured cultivars in this article. Cultivars indicated with \* are registered in Japan, but not with the IRRC (International Rhododendron Register and Checklist.)

me permission to use his work for this article. However, I fear that in the paper version of JARS, even more of the magic of these flowers will be lost. By crossing 'Suisen' back to its parent 'Reiko', 'Satsukibare'\* was produced (Fig. 16). Judging from pictures, 'Satsukibare'\* has the more showy flowers in terms of variegation intensity. A variety I do have myself is 'Seiten\*', a cross between 'Suisen' and 'Gyoko' (Fig. 17). 'Seiten'\* has the thickest flower petals of any azalea I own, though I have not been able to compare it with all the other varieties I mention here in this article. The flowers of 'Seiten'\* do have more substance to them than even 'Hilda Niblett', the Robin Hill, or 'Haru-nosono'.

For many of these varieties, the only knowledge I have is just a few pictures, their flower color and size, and their parentage. I wish I could tell you more about the specific characteristics and unique features of each of them, as well as about the specific flower patterns they produce. A few of these varieties I was able to obtain, but only recently. Nevertheless, I hope that these pictures suffice in giving you a fair representation of the newest showy large-flowering Satsuki varieties, their colors, flower patterns, and petal shapes. Luckily, pictures of azalea flowers often speak maybe not a thousand words, but at least a sentence or two.

### **What is the Purpose of So Many New Varieties?**

Out of the 300 new varieties produced in the 2010-2020 period, many will likely not gain any traction with the public. Many of these new varieties are very nice, but they are also somewhat redundant as many are very similar. Only the best and most distinct ones will survive the test of time. Some of them will be picked up by Japanese growers and be produced in larger numbers, including some for export to Europe or North America. Those varieties that do not enter rotation could be dropped from future Satsuki dictionaries, but their place will eventually be taken up by some of the hundreds of new varieties that will likely be produced by Japanese enthusiasts in the coming decades. Which of the current newest varieties will themselves be used to produce many new varieties in the next 30 years? Questions to be answered are: What kinds of flowers will these future varieties be able to provide? What are the limits on the size, color intensity, and diversity of flower patterns in Satsuki azalea flowers? Or maybe we should ask ourselves a different question? Namely, how extreme and unnatural must a Satsuki flower become before our taste and sensibility tells us it is just too much, and that we would rather prefer a more modest, plain and natural-looking flower? I suspect that for some readers, some of these varieties have already passed that point.

### **Introducing New Satsuki Varieties in the West**

In the meantime, our current challenge is to introduce these new varieties to the US and to Europe, propagate them true to their flower patterns, and keep them properly labelled. I believe these varieties will do well in temperate regions with

winters of Zone 8 hardiness. While many will do well in Zone 7, Zone 6 may be too cold for most of them. Very likely, the 'Suisen'-system varieties are not the most hardy among the Satsuki. I grow a few of these varieties in the ground here in the Netherlands in Zone 7, and they survived a -13° C (9° F) winter without direct damage. However, I have observed some stress and weak branches. Some of these varieties are not thriving like some of my other azaleas. Based on a few plants over a few years, I would say that 'Hilda Niblett' and other Robin Hill azaleas do better in my climate in comparison with the 'Suisen'-group cultivars. Since the Japanese focus a lot on the quality of the flowers, some of these varieties may be on the delicate side in terms of general hardiness and robustness, as required for landscaping plants. I believe that many Satsuki varieties would be happier if they could enjoy a longer growing season than my local Dutch climate provides.

### **What Role Can New Satsuki Cultivars Play in Our Gardens?**

What do these new Satsuki varieties offer to our gardens, and how do they fit in the toolbox of a landscape architect? The short answer is, I am not completely sure. Designing a garden is not my expertise. The long answer is that these Satsuki excel on the individual flower level. Because of their variegated flowers, every flower has its own unique pattern. New varieties are selected both on the neatness of the flower shape as well as the range of patterns. This is best appreciated while enjoying these azaleas from up close. As garden plants and without any specific bonsai-like training, these azaleas are low-growing compact mounding shrubs. It may take many decades for a nursery plant to grow into a 1.5 m (five ft) high plant that will allow one to easily enjoy the flowers from up close and without kneeling. Therefore, I believe these Satsuki are best planted in pots or in raised beds of some sorts, elevating them. As low mounding shrubs, they would do well in front of taller more upright plants, like Glenn Dales, deciduous azaleas, or Japanese maple trees. As these are lateblooming azaleas, they will also benefit from afternoon shade. This will improve flower longevity and prevent pigment bleaching. The main challenge with these new cultivars now is to introduce them to the USA, and then to find out which ones perform the best as garden plants in certain local climates. And finally, to produce sizable plants with the correct flower patterns so they can be an addition to the gardens of American azalea enthusiasts. Of course, they can also always be enjoyed as small potted plants or true bonsai.

*Cultivars indicated with \* are registered in Japan, but not with the IRRC (International Rhododendron Register and Checklist.)*

## Appendix:

Availability of Satsuki cultivars mentioned in this article in America and Europe.

US sources for Satsuki azaleas mentioned in this article.

- Nuccio's Nursery 2018 catalog lists: 'Gettoku', 'Juko', 'Ai-no-hikari\*', 'Kinpo', 'Kogetsu', 'Kaho', 'Gumpo', 'Gyoten'
- White's Nursery 2021 azalea catalog lists: 'Ai-no-tsuki\*', 'Izayoi'
- Azalea Hill Gardens & Nursery 2021 inventory lists: 'Ai-no-tsuki\*', 'Gyoko'

Note that none of these US-based nurseries stock 'Suisen', its sports, or its offspring.

EU source for Satsuki azaleas mentioned in this article:

MiniSatsuki.com has sold in the past: 'Aika\*', 'Meguriai\*', 'Suisen', 'Miharu\*', 'Koyo', 'Shin Koyo\*', 'Hitomebore\*', 'Juko', 'Karenko\*', 'Asuka\*', 'Asukayama\*', 'Kogetsu', 'Ai-no-tsuki\*', 'Shisen\*', 'Karenbana'\*

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*Mark Nijland has been growing and collecting Satsuki azaleas in the Netherlands since 2010. His projects include hybridizing new varieties and propagating Japanese Satsuki cultivars. Currently, he is a PhD candidate at Wageningen University working on protein aggregation.*