



## Original Article

# Some Ideas for *Rhododendron* Use in Landscaping

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## Abstract

Present state of parks, public gardens and other zoning green spaces categories foreshadows the need to develop and diversify the production of trees and shrubs. This paper presents results obtained in the promotion of *Rhododendron* species in arrangement works of green spaces, distribution of these plants by their habitus, special requirements in terms of environmental conditions, the color of the flowers, leaves and also the choice of other plant species that can help capitalize the *Rhododendron* in any landscape design. The experiment was performed on a 10-year period during which were chased several aspects of these plants such as adaptability to environmental conditions existing in the Northwest of the country, flowering period, vegetation, height reached in this time and best way for landscape design.

**Keywords:** rhododendron plants, companion plants, trees and shrubs, ornamental landscape.

## 1. Introduction

*Rhododendron* genus includes shrubs of great flowering beauty and elegance, species and cultivars obtained by hybridization in large numbers, including azaleas. Aptly named “the kings of ornamental shrubs” [4] they have a spread on four continents. Around them, a whole horticultural industry has grown in recent years and developed an entire branch of marketing and production of ornamental woody plants.

Unfortunately, in Romania there is currently no rhododendron breeding ground specialized in producing at a professional level, although there is demand for this range. Most plants are imported to us and often they are not adapted to face climate in Romania leading to large losses in the first year after planting. *Rhododendrons* and azaleas have more demanding growing requirements than many commonly cultivated plants and so will not grow easily in any garden.

*Rhododendron* genus is very diverse with over 1100 species [1] which vegetate naturally in very different areas, from the tropical to the high mountain area, but with some changes to the site and the correct choice of species and cultivars, most flower lovers will enjoy the beauty of these plants in their gardens.

Once successfully bred, rhododendrons and azaleas are unparalleled as landscape plants. Evergreen forms are beautiful all year round. Deciduous azaleas have very beautiful fall foliage featuring some of the brightest colors of yellow and orange. Planted in groups, they eclipse any ornamental shrub in the scenery with their beauty.

In the Botanical Garden of Jibou, *Rhododendron* species that adapt to local conditions are multiplied in own nurseries and promoted for landscaping design. In addition, further improvements to breeding and culture technologies are made for production of quality seedlings in a large variety of species and cultivars, well adapted to the climatic conditions of our country.

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*Rhododendron* genus is divided into two main groups: large shrubs, rhododendrons, cultivated in the garden, and dwarf shrubs, permanent green or small deciduous leaves, commonly called azaleas can be grown well in pots. Many azaleas have been selected by the Japanese in the last century from *Rhododendron kiusianum* Makino., *Rhododendron kaempferi* Planch and their hybrids. Among the most famous azaleas are hybrids obtained by the Belgians, crossing the *Rhododendron luteum* Sweet. with some American species.

It grows over 3000 varieties which are distinguished by size and plant vigor, flowering period, flower characteristic. Currently producing hybrids for *Rhododendron* plants has become an industry with many specialized nurseries producing rhododendron and azalea seedlings. Culture of *Rhododendron* species is quite delicate because of this they are found only in Botanical Gardens and hardly ever in parks [5]. In other countries, such as Great Britain, Hungary, France, Germany, Netherlands and so on, there are collections of outstanding beauty which fully justifies the efforts to create and care them (fig. 1).

The wide range of colors of rhododendrons is given by two classes of chemicals, carotenoids that produce the color yellow, orange and red and anthocyanins which are responsible for the color blue, pink and red-violet [2]. All azaleas should be admired without hindrance during the flowering period. Therefore, plants that are associated have to be discrete. Rhododendrons can be planted in areas shaded by buildings or trees and away from streams, forming groups or masses of color [3].



**Figure 1.** Rhododendron in landscape design [6]

## 2. Material and Method

The experiment was conducted over a period of 10 years (2002-2012) during which we studied a total of 15 species and varieties of *Rhododendron* pursuing the following: cold resistance, flowering time, height reached in 10 years, color of flowers, sun tolerance.

Flowering season is presented as very early (VE), early (E), midseason (M), early-midseason (EM), late midseason (LM), late season (L) and very late (VL). The designations are relative; no specific dates are given because weather conditions, primarily temperature, vary from place to place and year to year which in turn advances or delays time of flowering. Rhododendrons and azaleas are available in such diversity of flower color, foliage texture, form, season of bloom and plant size as to fit almost any landscape.

A landscape plan is necessary to coordinate the planting with the architecture of buildings, roadways, paths, existing trees and any other existing features of landscape and to determine how many and type of plants needed.

The landscape design made at Jibou Botanical Garden was composed of different species and cultivars of rhododendrons used to observe their behavior in different landscape compositions such as:

1. Border plantings and hedges
2. Woodland plantings
3. Rockery plant

## 3. Results and Discussions

In tab. 1 were presented studied made at the Botanical Garden Jibou on the main characteristics at the rhododendron species and varieties. For all three categories of design (border plantings and hedges, woodland plantings, rockery plant) were took into account the height of species and varieties that have entered the design, their flowering period, their resistance to cold and heat and their tolerance to the sun.

The integration of flower color is important to the harmony of any landscape design, bright colors, such as orange and red are much more difficult to blend into group plantings.

It is usually more effective to use a group of at least three-five plants of a particular kind rather than to have single plants as little spots of many colors.

### Border plantings and hedges

For this type from the 15 species and cultivars only those that were small sized were chosen for the best results used in this composition.

The following species were tested: *Rhododendron* „GomerWaterer”, *Rhododendron* „Brigite”, *Rhododendron* „Baden-Baden”, *Rhododendron poukhanense* H.Lev, *Rhododendron yakushimanum* Nakai. For each variety, 5 plants were planted in a

soil with 4.5 - 6.0 pH consisting of 50% peat, 25% sand and 25% beech humus.

Two different planting locations were chosen, one with exposure to the sun during summer from 10 am to 16 pm and the other location with sun explosion from morning until 11 o'clock.

Table 1. The biological material used in experiments

No.	Species	Natural Spread	Height in 10 years -cm-	Flower color	Bloom time*	Bio-form	Resistance to cold	Sun tolerance
1.	<i>Rhododendron thomsonii</i> Hooker	Himalaya, Western China	1.4	blood red	EM	evergreen shrub	low resistance	low resistance
2.	<i>Rhododendron yakushimanum</i> Nakai	Japan	0.4	pink	EM-M	evergreen subshrub	medium resistance	medium tolerance
3.	<i>Rhododendron catawbiense</i> Michaux	Eastern United States	1.2	lilac to pink	ML	evergreen shrub	good resistance	medium tolerance
4.	<i>Rhododendron ponticum</i> Linnaeus	Western Mediterranean area	1.1	purple	L	evergreen shrub	medium resistance	medium tolerance
5.	<i>Rhododendron micranthum</i> Turcz.	China	1.4	white	L	evergreen shrub	medium resistance	medium tolerance
6.	<i>Rhododendron degronianum</i> Carriere	Japan	0.9	pink	EM	evergreen subshrub	medium resistance	medium tolerance
7.	<i>Rhododendron roseum</i> Elegans	-	1.4	lavender	LM	evergreen shrub	good resistance	good tolerance
8.	<i>Rhododendron</i> „Rocket”	-	1,2	pink	M	evergreen subshrub	medium resistance	medium tolerance
9.	<i>Rhododendron poukhanense</i> H.Lev.	Korea	0.8	lilac	EM	evergreen subshrub	good resistance	good tolerance
10.	<i>Rhododendron luteum</i> (Linnaeus) Sweet	from Eastern Europe to the Caucasus	1.6	yellow	M-LM	deciduous shrub	medium resistance	good tolerance
11.	<i>Rhododendron</i> „Scartlet Wander”	-	0.6	red	M	evergreen subshrub	medium resistance	good tolerance
12.	<i>Rhododendron</i> „Nova Zembla”	-	1.2	red	M	evergreen shrub	good resistance	medium tolerance
13.	<i>Rhododendron</i> „Gomer Waterer”	-	0.9	white	LM - L	evergreen shrub	good resistance	good tolerance
14.	<i>Rhododendron</i> „Brigite”	-	0.5	pink	LM	evergreen shrub	medium resistance	medium tolerance
15.	<i>Rhododendron sutchuenense</i> Franchet	Western China	1.7	lilac to rose	EM	evergreen subshrub	good resistance	medium tolerance

\*EM-early-midseason, M-midseason, LM-late-midseason, L-late

### Woodland plantings

In this experiment we used all 15 species and cultivars of rhododendron because planting rhododendrons to have shelter from other trees is a common practice in both North America and Western Europe with good results.

The high shade and humidity of the forest, its gift of mulch each year and the vertical emphasis of

the tree trunks all serve to enhance the visual effects while proving an environmental benefit to the landscape planting.

After 2 years in pot culture plants were planted at the final place in holes of 80 x 80 x 60 cm where there was placed a soil consisting of 50% peat, 25% sand and 25% beech humus (fig. 2 and 3).



**Figure 2.** Rhododendron plants in the experimental fields

### Rockery plant

This experiment was done in the Japanese Garden on a rockery with northern exposure where many species and cultivars of rhododendron were planted. In this case also, smaller plants were chosen. The following plants were selected for the experiment: *Rhododendron* „Baden-Baden”, *Rhododendron yakushimanum* Nakai, *Rhododendron* „Gomer Waterer”, *Rhododendron* „Brigite”, *Rhododendron* „Baden-Baden”, *Rhododendron poukhanense* H.Lev, *Rhododendron* „Rocket”, *Rhododendron* „Roseum Elegans”.

### 4. Conclusions

Based on the analyzed data can conclude that among the most important ecological factors limiting the introduction of rhododendrons in the landscape are temperatures and sun tolerance. In the experiment were used 15 specie and hybrids of rhododendrons from Asia, North America and Europe. Using rhododendrons as border plants and hedge plants can only be accommodated in sheltered locations with small species. Sun exposure in the NV part of our country causes great damage to plants causing their death over time.

None of the species and hybrids gave satisfactory results in this case. Better results have been reported for the plants used as borders in partially shaded places where *Rhododendron poukhanense* H.Lev and *Rhododendron yakushimanum* Nakai had the best results. In the case of planting in the shelter of bigger trees, the results were positive, all 15 species and cultivars tested developed harmoniously and during the flowering period formed colorful oasis in the Garden.



**Figure 3.** Rhododendron plants in the experimental fields

Although during the 10 years period, the winter temperature dropped to  $-24^{\circ}\text{C}$ , most plants withstood the frost. The following were affected more: *Rhododendron thomsonii* Hooker *Rhododendron yakushimanum* Nakai *Rhododendron micranthum* Turcz. *Rhododendron degronianum* Carriere. Rhododendron plants can be successfully used in rockery landscaping with the condition that species and cultivars are carefully chosen and the rockery location doesn't have Southern exposure, ideally a North, Northeastern exposure. For this type of landscaping assuring humidity and the specific soil for Ericaceae is very important. From the tested species, positive results were found on *Rhododendron* „Gomer Waterer”, *Rhododendron* „Gomer Waterer”, *Rhododendron poukhanense* H.Lev.

In all situations in which soil, site and climatic conditions are favorable, rhododendrons are capable of dominating the landscape. All varieties and species used in the three types of arrangements have proven resistant to environmental conditions provided by a good location, which leads us to recommend their use in the country's northwest landscaping for their unmatched beauty.

### References

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