

RARE DENDROTAXONS CULTIVATED IN THE UNIVERSITY BOTANIC GARDEN MACEA (ARAD COUNTY)

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Abstract: The Macea University Botanical Garden, which covers a surface of 21.5 hectares, represents a scientific collection of 2.200 woody taxons. We presents 11 rarities of the Romanian cultivated dendroflora, these are: *Callicarpa cathayana* Chang, *Chimonanthus nitens* Oliver, *Davidia involucreta* Baill., *Euonymus carnosus* Hemsl., *Forestiera neomexicana* A. Gray., *Paliurus hemsleyanus* Rehder, *Pistacia chinensis* Bunge, *Platycarya strobilacea* Sieb. et Zucc., *Quercus shumardii* Buckl., *Sinojackia rehderiana* Hu, *Sorbus caloneura* Rehder. The dendrotaxons adaptation and acclimatization confers a permanent preoccupation to the garden specialists.

Keywords: rare dendrotaxons

Introduction

The Botanical Garden of the Western University “Vasile Goldiș” is situated in the Macea locality, in the district Arad, 23 km from Arad, has a surface of 21.5ha.

Under a bio-pedo-climatic report, we are mentioning that the territory of the garden is plane, the level of ground-water is at 3-4m, the soil is of the type levigated chernozem, with a useful thickness of 95cm, with a good stucture, a clay-sand texture and a pH between 6.8 and 7.2. The annual average temperature is of 11.3 °C, the absolute maxima is of 39 °C, and the absolute minima of -25 °C. The precipitations are situated around the average annual value of 550mm. These particularities have created large opportunities for the development of some rich collections in dendrotaxons, which are containing not only protected and rare species from the Romanian flora, but also from other geographical regions.

If in 1968, at the inventory realized with the occasion of putting this territory under protection, the collection counted 68 tree and shrubs taxons, in 1987 it counted 1,439 taxons, and now days the number of taxons surpasses the number of 2,200. The introduction of wooden species with the purpose of adapting them to the conditions characteristic for the region and respectively for their acclimatization, this constitutes an priority objective for the garden personnel. The collaboration and mutual change relationships of seed material have extended a lot, the Botanical Garden Macea being in the last year the partner of 179 institutions.

Rare dendrotaxons:

In the work “Flora lemnoasă spontană și cultivată din România”(“The wooden spontaneous and cultivated flora in Romania”) appeared in Iași, there are numerous rare dendrotaxons mentioned only from within Macea.

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As it follows, we will introduce 11 wooden species cultivated in Macea, which are considered by us as rarities for the cultivated dendroflora of Romania (**Tab. 1**).

Callicarpa cathayana Chang (Fam. *Verbenaceae*) – Shrub, 1,5-3m high; branchlets slender, slightly stellate tomentose when young, grabrescent; simple, opposite, deciduous leaves, elliptic to ovate, 4-8cm long, 1.5-3cm wide; purple flowers and fruits, globular fruits of 2 mm in diameter. It is native to China, where it grows in mixed forests on mountain slopes or in valleys, below 1,2000m altitude.

The 4 specimens in Macea are in the Dendrologic collection, in the sector called Asia, they are vegetating very well, and they are blooming and fructifying abundantly, yearly.

Chimonanthus nitens Oliver (Fam. *Calycanthaceae*) – Evergreen shrub or treelets, 1-6 m high, with erect port; young twigs quadrangular, older twigs sub-terete, puberulous, glabrous with age; leaves is simple, opposite, smooth, papery to sub-coriaceous, elliptic, elliptic-lanceolate, 2-18cm long, 1.5-8cm wide; solitary flowers, axillary, minor, 7-28mm in diameter, yellow or yellowish-white. The species is of Chinese origin, where it is to be found in rare forests in the mountain area, in stations with calcareous substratum.

The specimen cultivated at Macea, received like the *Chimonanthus zhejiangensis* M.C.Liu, is in the collection of Thermophile plants in the garden, it vegetates well, it blooms but it doesn't fructify. The low temperatures during winter, affects their leafage and the apex of the sprouts. It is ornamental both through its flowers which are scented and its leafage.

Davidia involucrata Baill. (Fam. *Davidiaceae*) – Arborescent species, it can surpass 20m in height in its natural area; native to China; the bright to dark green leaves are cordate, tomentose underneath, similar to Tilia species. This tree is most conspicuous in May when draped with its 2 large, white bracts, which are not equal and surround the flower; the fruit is a 3cm big drupe.

In the year 2006, the specimen cultivated at Macea has bloomed for the first time. It endured well the low temperatures that were registered in the last winters, being more sensitive to droughts.

Euonymus carnosus Hemsl. (Fam. *Celastraceae*) – Native to China, it is erect shrub or small tree, 5-6m high; the leaves are opposite, glossy on the superior side, sub-coriaceous, 5-15cm long, and 2-7cm wide; the fruit is a pink capsule which turns deep blood crimson.

The 3 specimens cultivated in Macea, are placed in a shady spot, they are vegetating very good, they fructify annually. The apex of the sprouts is affected in some of the winters by the low temperatures.

Forestiera neomexicana A. Gray. (Fam. *Oleaceae*) – Shrub, 1-3m high; deciduous, simple leaves, opposite, 2-5cm long; white-yellowish flowers inconspicuous, followed by black, egg-shaped fruits covered with a blue bloom. Native to S.W. United States, it prefers the well drained soils and sunny stations.

The specimen in the Botanical Garden Macea is cultivated in the Dendrological collection, in the so-called North America sector, sadly in the shade of some ash trees. It vegetates weakly, and it doesn't fructify. We will try to increase the number of specimens on a vegetative way, and the obtained seedling plants will be planted in sunny spots.

Paliurus hemsleyanus Rehder (Fam. *Rhamnaceae*) – Deciduous shrub, native to China; it has greenish-red young stems, pubescent; the long thin stems armed with innumerable pairs of unequal, hard and straight thorns, the one on the upper side a little longer; the leaves alternate, they are relatively symmetrical, glabrous, glossy on both sides.

The species is sensitive to the low temperatures during winter. One of the two specimens the garden had, were lost because of the cold winter of 1994-1995, the remaining one loses each winter approximately 2/3^{ds} from the branches, which it regenerate relatively easy, after the cleaning cut in spring.

Pistacia chinensis Bunge (Fam. *Anacardiaceae*) – Shrub or tree of small size (8m), even pinnate leaves, in autumn they get different overtones of yellow, orange and flaming red, deciduous. Dioic species, native to China.

Also cultivated in the collection of Thermophile plants in the garden, it vegetates well, it never bloomed, and it never has been affected by the local climatic extremes.

Platycarya strobilacea Sieb. et Zucc. (Fam. *Juglandaceae*) – Tree of small size, native to China, Japan, Korea; pinnate leaves composed of 7 to 15 sessile, lanceolate toothed folioles; flowers small, monoecious, the males in cylindrical catkins, the females in erect, green, cone-like clusters.

The two specimens have fructified in the last years, the more vigorous one vegetates well, the other one being severely affected by the frost of the last winter.

Quercus shumardii Buckl. (Fam. *Fagaceae*) – Tree of big size, native to S. W. United States; leaves are deeply lobated, in autumn they are colored in purple-red; the acorn is of 2.5cm, the maturation is biannual. They prefer warm climates, but they also resist in stations with humid soils.

Cultivated in the Dendrologic collection, in the North-America section. The 4 specimens we own, vegetate very well and fructify abundantly.

Sinojackia rehderiana Hu (fam. *Styracaceae*) – Deciduous shrub or small tree, in wild (E. China) up to 5m; leaves alternate, glabrous, elliptic to elliptic-obovate, 4-12cm long, 2-6cm wide; flowering in May; flowers are white, 2 to 6 in axillary leafy racemes; fruit is cylindric-oblong, brown, of 2-2.5cm in length, with an acuminate apical beak.

In Macea it vegetates well, it fructifies annually, and it is to be found in the Dendrologic collection, the filogenetic section. The bad weather in winter, affect the apexes of the sprouts.

Sorbus caloneura Rehder (fam. *Rosaceae*) – A large shrub or small tree with erect stems; simple leaves, oval-oblonge, double toothed and boldly marked by 9-16 pairs parallel veins; small fruits, brown, globular, with a flattened apex; rare species and in its natural habitat (C. China).

It has been recently introduced in the Macea collection, and it vegetates well.

Conclusions

- Most majority of the taxa presented in this paper are native to China, all of them having ornamental features.
- This study complete our anterior data concerning the scientific inventory of the cultivated trees and shrubs in Macea Arboretum.
- This study emphasize a permanent care of the Botanic Garden staff in introducing new taxa, having in mind their adaptation and acclimatization to the local climate conditions.

Tab. 1 Rare dendrotaxons cultivated in the University Botanic Garden Macea

No. crt.	Scientific name	Origin	Source	Intr. year	No. of spec.	Height -m-
1	<i>Callicarpa cathayana</i> Chang	China	Arb. Waasland, Belgie	2001	6	1,5
2	<i>Chimonanthus nitens</i> Oliver	China	B. G. Hangzhou, China	1989	1	1,5
3	<i>Davidia involucreta</i> Baill.	China	?	1994	1	6
4	<i>Euonymus carnosus</i> Hemsl.	China	B. G. Hangzhou, China	1989	3	2
5	<i>Forestiera neomexicana</i> A.Gray.	S.W. U.S.A.	Arb. Simeria, Romania	1978	1	3
6	<i>Paliurus hemsleyanus</i> Rehder	China	H.B. Hangzhou, China	1989	1	2
7	<i>Pistacia chinensis</i> Bunge	W. China	?	1992	1	4
8	<i>Platycarya strobilacea</i> Sieb. et Zucc.	China, Japan, Korea	H.B. Hangzhou, China	1988	2	5
9	<i>Quercus shumardii</i> Buckl.	S.W U.S.A.	Arb. Morton, Lisle, U.S.A.	1987	4	10-12
10	<i>Sinojackia rehderiana</i> Hu	E. China	B. G. Strasbourg, France	1993	1	1,5
11	<i>Sorbus caloneura</i> Rehder	C. China	N. B. G. Meise, Belgie	2004	4	1

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