

## POSSIBILITIES OF USING EVERGREEN SPECIES IN EXTERIOR DECOR

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### ABSTRACT

*In our country's conditions, most herbaceous and deciduous ornamental plants lose their ornamental qualities during the cold season, and the landscape becomes dreary. In these circumstances, the group of evergreen ornamental plants, also known as evergreens, provides color and texture in landscaping due to their leaves that remain green throughout the year. Although the concept of an "evergreen" garden often brings conifers to mind, in landscape design, the association of species belonging to a single plant group is avoided due to visual monotony. Therefore, in this type of permanently green garden, and not only, the combination of conifers with other groups of species with persistent foliage (deciduous trees and shrubs, evergreen herbaceous perennials, succulents) is essential. Based on these considerations, our work aims to create landscaping solutions that include this variety.*

### INTRODUCTION

In the decoration of green spaces, a wide range of ornamental woody or herbaceous species is used, distinguished by the color of their leaves, flowers, texture, or general shape, as well as their growth habits, bark color and texture, flower size, or fragrance (Anton & Nicu 2005, Iliescu 2008). Various combinations are employed based on these characteristics, depending on the style and type of landscaping.

In our country's conditions, most herbaceous and deciduous ornamental plants lose their ornamental qualities during the cold season, and the landscape becomes dreary. In these circumstances, the group of evergreen ornamental plants, provides color and texture in landscaping due to their leaves that remain green throughout the year (Potapenko et al. 2020).

On a global scale, low winter temperatures play a vital role in limiting the distribution of evergreen broad-leaved vegetation (Aerts 1995, Pan et al. 2008, Berger 2009). Evergreen and deciduous broad-leaved tree species can coexist across various landscapes globally and play significant roles in forest structure and functions (Kikuzawa et al. 2013, Ouédraogo et al. 2016, Wang et al. 2007), as well as in landscape design. These plants, also known as evergreens or species with persistent leaves, are adapted to survive seasonal temperature changes and maintain functional leaves throughout the year. Their adaptations include mechanisms for water conservation, resistance to low temperatures, and efficiency in utilizing solar light, allowing them to thrive in temperate environments (Qingjuan

et al. 2010, Ge & Xie 2017, Zhang et al. 2017). Although the concept of the "evergreen" garden often brings conifers to mind, in landscape design, the association of species belonging to a single plant group is avoided due to visual monotony. Therefore, in this type of permanently green garden, and not only, the combination of conifers with other groups of species with persistent foliage (deciduous trees and shrubs, evergreen herbaceous perennials, succulents) is essential (Mandă et al. 2019).

Vegetation is the most important component of any landscape project (Mandă & Salahoru 2018). Landscape design decisions regarding plants selection are typically informed by ecological considerations, such as the choice to use native species, plant hardiness in a given environment, overall design aesthetic principles like balance or harmony between shapes, as well as costs relative to the overall project budget. Few designers consider which plants choices may support healthy attention functioning year-round in the designed environments (Paddle & Gilliland 2016). Based on these considerations, our work aims to create landscaping solutions that encompass this variety.

## **MATERIAL AND METHODS**

The flora of Central Europe is relatively poor in evergreen species compared to the temperate regions of other continents. However, in recent years, various evergreen species of deciduous trees have been introduced and cultivated in Romania. The assortment of species proposed in landscaping solutions are adapted to temperate climate conditions, characterized by cool and moist winters and warm summer seasons.

Two landscaping solutions were created using the Realtime Landscaping Architect Trial 2018 software, using ornamental species from the analyzed plant assortment. The Realtime Landscaping Architect Trial 2018 program is a garden and green space design program, in 2D or 3D format. It offers the possibility of creating a project to an accurate scale, a complete landscape through the elements and symbols available in an extensive library. The program provides tables with the names and symbols of decorative elements, and can calculate and estimate the costs of materials used. Through the Walkthrough function, Realtime Landscaping Architect offers the possibility to present the 3D landscaping in real-time, as well as through video clips.

## **RESULTS AND DISCUSSIONS**

The group of evergreen woody and herbaceous species is a diverse one, although this assortment is less studied and used in our region. Nevertheless, they are present in outdoor designs, in parks, botanical gardens, public and private gardens. In this work, the aim was to create landscaping solutions where species with persistent foliage were predominantly used, in various combinations.

### **Proposal for the design of a public recreational space (I)**

The arrangement is in a geometric style, framing a small public recreation space (100/100 m<sup>2</sup>), and overall, this arrangement is surrounded by a brick wall. The paths of the alleys are delimited by hedges formed from *Buxus sempervirens*, creating the play of a small labyrinth, the main alley intersects the garden from the entrance to its end where an ornamental basin is placed, completed with species of *Nymphaea*.

As biological material, predominantly species with permanent decoration were used, both trees and shrubs as well as herbaceous plants. Woody species such as *Ginkgo biloba*, *Cryptomeria japonica*, and *Lagerstroemia indica* were arranged outside the boxwood contour, and under their crowns *Vinca minor* was used as a substitute for the lawn. In the first two frames from the main alley, on each side, there are three *Pyracantha coccinea* shrubs followed by areas covered with *Liriope muscari* and *Heuchera* spp. to bring color throughout the vegetation season and also in winter. Further on both sides of the main alley, there is a refuge space with a bench, in front of which there is a *Prunus laurocerasus* shrub surrounded by *Lonicera nitida* "Maigrun" and *Aquilegia x hybrida* near the benches. In the main frames of the arrangement, there is *Viburnum rhytidophyllum* surrounded by *Iris* and *Tradescantia x andersoniana* in the center. In the last frames behind the arrangement, there are two benches, *Taxus baccata* framed by a circle of *Heuchera* spp., a decorative species with vividly colored, semi-persistent leaves. On the back wall, there are evergreen climbing species *Lonicera japonica* and *Hedera helix* (Figure 1).

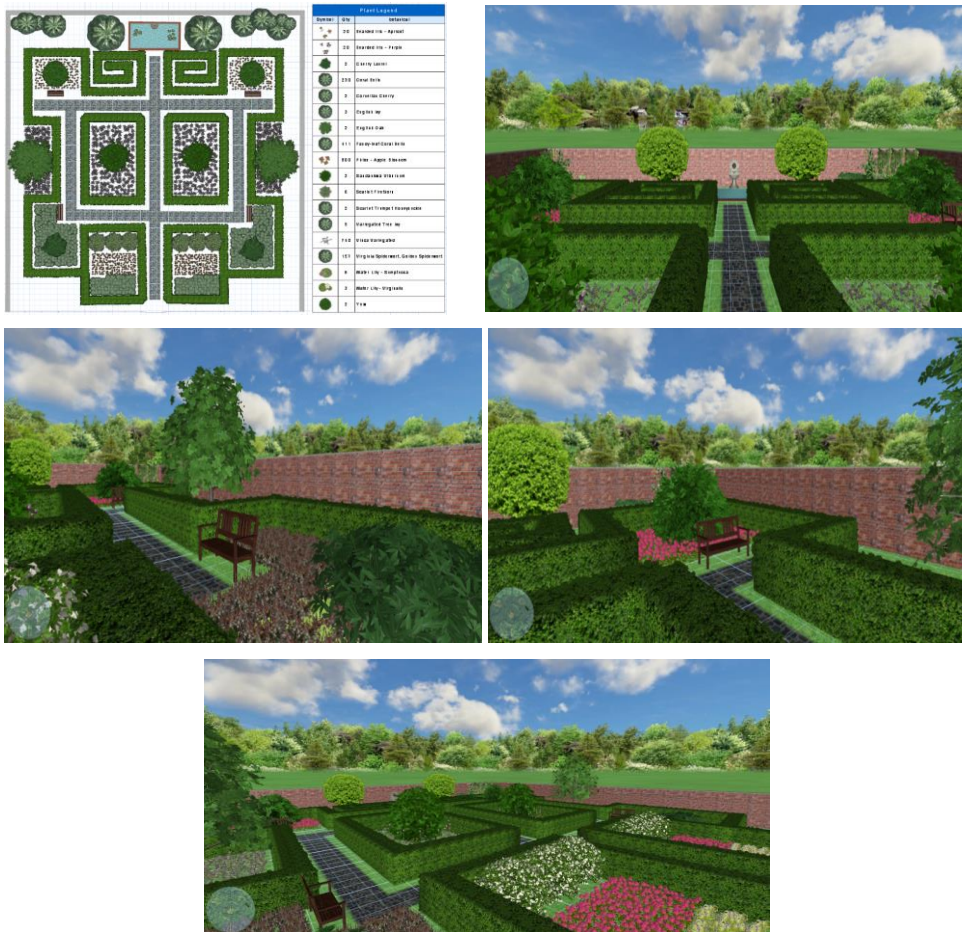


Figure 1. Public Urban Recreational Space - Layout Plan; images inserted from the program

## Proposal for the design of a Private Garden (II)

The proposal for arranging a modern private garden, of small dimensions (50/50 m<sup>2</sup>), predominantly includes woody species, most of which have persistent foliage. Herbaceous plants used in the arrangement have been placed under the trees' canopy, and two shade-loving species were chosen. The house's annexes include a terrace, furnished with a table, a garden sofa, three chairs, an umbrella, and five decorative pots. Two curved paths connect the area with the pool and the barbecue. In front of the pool, two garden tables, three sun loungers, and two umbrellas are arranged. The garden is bordered on two sides by a brick wall and on the other two sides by a wooden fence.

At the entrance, in front of the house, a specimen of *Magnolia grandiflora* will be placed, and between the entrance and the garage, a border of *Euonymus japonicus* is proposed. In the lateral area, a group of three specimens of *Acer platanoides* is suggested, one of which can be *Acer platanoides* "Drummondii", with variegated leaves; under their canopy, *Ophiopogon japonicus* and *Liriope muscari* were used as an alternative to shade grass. In front of the pool, terrace, and house, neatly trimmed specimens of *Buxus sempervirens* and *Buxus microphylla* were placed, as well as a few specimens of *Paeonia* spp. with white and red flowers, in front of the pool and terrace. Near the barbecue, *Prunus laurocerasus* and *Photinia x fraseri* were placed. In the right corner of the garden, a grouping of 5 woody species was chosen - two specimens of *Cornus florida*, one of *Aucuba japonica*, and two specimens of *Pyracantha coccinea*; in the left corner, a grouping of three species was proposed - *Magnolia grandiflora*, a specimen of *Euonymus japonicus* "Aureomarginatus" and a specimen of *Cotinus coggygia* "Royal Purple". As a substitute for grass under the trees' canopy, *Vinca minor* was proposed, complemented by small groups of *Helleborus orientalis* and *Helleborus x hybridus* (Figure 2).



Figure 2. Private Garden - General Plan; Images from Different Angles Inserted from the Program

## CONCLUSIONS

Contrary to the general impression that an evergreen garden exclusively comprises coniferous species, we have at our disposal a sufficiently rich assortment of herbaceous and woody ornamental plants from the deciduous group that can be used in landscaping, as evidenced by the list of evergreen species identified in our region.

Although the concept of an "Evergreen" garden suggests designs predominantly featuring coniferous species, in landscape design, the association of species belonging to a single plant group is avoided due to visual monotony. Such a garden can have a design just as complex and successful as any other type of ornamental garden.

The species proposed in the presented landscaping solutions, besides decorating primarily through leaves of different sizes, colors, and textures, can also adorn with solitary flowers (*Magnolia grandifolia*, *Vinca major*) or grouped in rich inflorescences (*Pyracantha coccinea*), through fruits (*Ilex* spp., *Mahonia* spp., *Skimmia japonica*) or through their overall structure (*Euonymus* spp., *Cotoneaster* spp., *Lonicera nitida*).

Shrubs and sub-shrubs with creeping growth habits can be used as ground cover plants under the crown of trees, where grass does not thrive over time. Under these conditions, shade-loving herbaceous species (*Vinca major*, *Vinca minor*) or grass substitute species (*Liriope* spp., *Ophiopogon japonicus*) can be used; the only drawback is that some of these species do not tolerate direct or intense traffic.

The proposed landscaping solutions confirm that the studied assortment is rich and varied enough (herbaceous perennials and succulents, erect or creeping shrubs, sub-shrubs, vines) to create diverse ornamental compositions that meet the need for "greenery" throughout the year.

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