

WAYS OF USING DENDROLOGICAL SPECIES IN PLANT COMPOSITIONS FOR HEDGES

MODALITĂȚI DE UTILIZARE A UNOR SPECII DENDROLOGICE ÎN COMPOZIȚII VEGETALE PENTRU GARDURI VII

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Abstract. For the contouring and highlighting of landscaping, the most appreciated technique is the use of hedges, being also one of the most ornamental methods of delimitation, masking, protection or obtaining privacy within a site. Thus, this plant composition is increasingly addressed in both public parks and private gardens. Hedges are defined by fine, graceful and sinuous lines or statuary and geometrized, made of plant compound of low or imposing heights, and associated with elements such as water, buildings, alleys within the arrangements or even together with other plants. In order to illustrate this concept, in this paper we studied the compatibility of the use of special dendrological genera from an ornamental point of view, whose biological characteristics allow them to be used in compositions such as hedges. For each of the five genres studied, two types of systematization were used, thus being able to determine their sustainability over time.

Key words: hedges, plant composition, *Cupressocyparis leylandii*

Rezumat. Pentru conturarea și evidențierea amenajărilor peisagere, cea mai apreciată tehnică o reprezintă utilizarea gardurilor vii, fiind de asemenea, una din cele mai ornamentale metode de delimitare, mascare, protecție sau de obținere a intimității în cadrul unui sit. Astfel, această compoziție vegetală este din ce în ce mai abordată atât în parcurile publice cât și în grădinile private. Gardurile vii se definesc prin linii fine, grațioase și sinuoase ori statuare și geometrizate, din compus vegetal de înălțimi reduse ori impunătoare, și asociate cu elemente precum apa, construcțiile, aleile din cadrul amenajărilor ori chiar împreună cu alte plante. În vederea ilustrării acestui concept, în cadrul lucrării de față s-a studiat compatibilitatea utilizării unor genuri dendrologice deosebite din punct de vedere ornamental a căror caractere biologice le permit utilizarea în compozițiile de tipul gardurilor vegetale. Pentru fiecare din cele cinci genuri luate în studiu, s-au folosit două tipuri de sistematizări, putându-se astfel determina sustenabilitatea acestora în timp.

Cuvinte cheie: garduri vii, compoziții vegetale, *Cupressocyparis leylandii*

INTRODUCTION

In modern art, the useful and the functional are identified with the beautiful, therefore, the purpose of the vegetal compositions consists not only in beauty and spectacularity but also in their functionality, as Socrates states “all things that serve man are at the same time beautiful and good as long as they are useful” (Miller *et al.*, 2001). Thus, at the base of the concept of intimacy, the easiest solution seems for many of us to build a fence, as high as possible around the

frequented space, but this is not the only problem. Moreover, in urban areas the level of air pollution is very high and therefore it is necessary to achieve the most effective protection (Bichis, 2009). Thus, the insulation as well as the protection against polluting factors (such as noxious substances, noise but also lights) can be achieved primarily through hedges, green walls and alignments (Șelaru, 2004).

As a result, this paper addresses different ways of creating hedges, which do not create the feeling of isolation or constraint, which can develop near walls or green walls, but to obtain open spaces, with wide perspectives and correctly placed points of interest. Thus, the vertical systematization aims to capitalize on the points of great landscape interest and natural beauty, seeking to open beautiful views along the perspective axes, larger water surfaces, promenades that offer panoramic views, lawns, etc.

Despite the fact that a built fence requires less attention and can have the same role, it does not have as many advantages as a hedge (Stanciu, 2006). The latter, once planted, does not require expensive foundations or refreshment, it becomes hard enough to serve almost all the functions of a manufactured fence, and in addition it offers greater durability of life, continuous development and over time, an entire ecological system, which gives the hedge a much greener choice. Trees and shrubs are the perfect solution to bring balance and harmony to a garden, in contrast to the surrounding buildings (Posedaru, 2000). They contribute to the overall picture of the garden, to the filtration of air and noise (Sonea *et al*, 1979).

MATERIAL AND METHOD

The purpose of this paper is to synthesize the most representative genera and dendrological species and to present how they can be used in the composition of hedges.

At the base of this research is the realization of two distinct landscape arrangements, with hedges differently systematized and fulfilling distinct functions within the sites.

To create and illustrate the compositions as realistically as possible in the context of the chosen sites, we used the design and rendering programs AutoCAD and Realtime.

In order to achieve this goal, a number of 10 dendrological genera were chosen, whose characteristics allow them to be used in the form of hedges. All the genera and species presented in this paper were chosen due to the high plasticity when pruning, the long periods of decoration either by foliage, fruits or inflorescences, characteristics mentioned in table 1:

- vigor: ●- little; ●●- average; ●●●- big;
- biological requirements:-

<ul style="list-style-type: none"> ☀- undant light; ☀- shadow ☀- semi-shade; 	<ul style="list-style-type: none"> 💧- low requirements for humidity 💧- modest requirements for humidity; 💧- high requirements for humidity; 🌡- low resistance to negative temp.; 🌡- average resistance to negative temp.; 🌡- high resistance to negative temp.;
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- rhythm of growth ●- slow; ●●- moderate; ●●●- fast;

- accessibility to cutting ●- low; ●●- average; ●●●- big;
type of foliage:- 🍃ersistent; 🍃ling leaves.

Table 1

Characterization of dendrological species used for hedges

Scientific name	Height (m)	Vigor	Ecological requirements	Rhythm of growth	Accessibility to cutting	Period of decor I – Winter II – Spring III-Summer IV- autumn	Type of foliage
<i>Thuja occidentalis</i>	5-10	●●●	☀️🌡️💧	●●●	●●●	I-II-III-IV	🍃
<i>Taxus baccata</i>	15-20	●●●	☀️🌡️💧	●	●●●	I-II-III-IV	🍃
<i>Cupressocyparis leylandii</i>	10-15	●●●	☀️🌡️💧	●●●	●●●	I-II-III-IV	🍃
<i>Photinia x fraesi</i>	1,5-2	●●●	☀️🌡️💧	●●	●●●	II-III-IV	🍃
<i>Forsythia suspensa</i>	1,5	●●●	☀️🌡️💧	●●●	●●●	II	🍃
<i>Berberis thunbergii</i>	2,5	●●	☀️🌡️💧	●●	●●●	II-III-IV	🍃
<i>Hibiscus syriacus</i>	3	●●●	☀️🌡️💧	●●	●●●	III	🍃
<i>Cotinus coggygia</i>	5	●●●	☀️🌡️💧	●●	●●●	II-III	🍃
<i>Cornus alba</i>	9	●●	☀️🌡️💧	●●	●●●	IV	🍃
<i>Buxus sempervirens</i>	6	●●	☀️🌡️💧	●●	●●●	I-II-III-IV	🍃

Thus, researches were carried out on different ways of arranging and systematizing plants in order to achieve the so-called vegetal compositions and hedges in a private garden of 1071 m² in Vaslui County, presented in figure 1.



Fig. 1. The space proposed for development in Vaslui County

The second site where we proposed the arrangement of compositions with hedges is located in the Bucium neighborhood of Iasi and has a total area of 1522 m²,

but the space where I proposed the placement of compositions with hedges occupies a much smaller area of only 229.11 m² (fig. 2).



Fig. 2. The space proposed for development in Iași County

RESULTS AND DISCUSSIONS

In order to stand out from the patterns and obtain more creativity and colour, the arrangement solution proposed for the systematization of the green space within the garden in Iasi was to create a mixed hedge. The benefits of such a proposal were not limited only to those of an aesthetic nature, but also took into account the sustainability and health of the plants chosen to make this mixture (fig. 3).

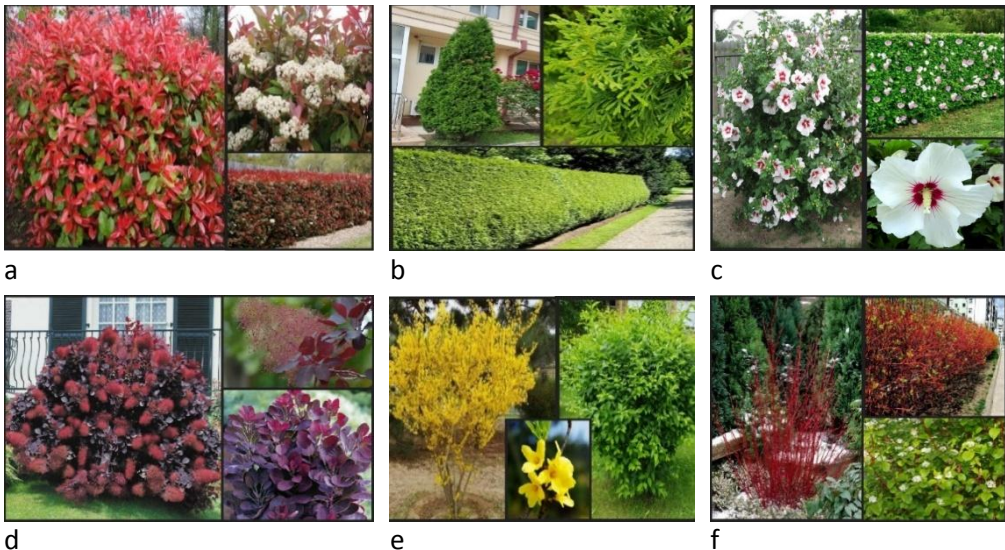


Fig.3. The vegetal material used in arranging the mixed hedge: a. *Photinia x fraesi*, b. *Thuja occidentalis*, c. *Hibiscus syriacus*, d. *Cotinus coggigria*, e. *Forsythia suspensa*, f. *Cornus alba*

Therefore, for the choice of plant material, compatible dendrological species were selected that have the same rhythm of development as *Photinia x fraesi*, *Thuja occidentalis*, *Hibiscus syriacus*, *Cotinus coggigia*, *Forsythia suspensa* and *Cornus alba*.

Thus, we intervened in the revitalization of the space by compositional change of the existing hedge in Photinia by removing 40% that were replaced with species such as *Hibiscus*, *Cotinus*, *Forsythia suspensa* and *Cornus alba* Sibirica variety as seen in figure 4.



Fig. 4. The proposal for arranging the mixed hedge

To balance the overall picture on the opposite side of the area where we proposed the arrangement of the mixed hedge, we proposed the creation of a hedge of *Cupressocyparis leylandii*, whose development we followed for 3 years. The growth of this species can be well seen in figure 5.



Fig. 5. *Cupressocyparis leylandii* in 2016 and in 2019

The landscaping project for the garden in Vaslui County, was designed to bring to life a land without vegetation by placing compositions with hedges (fig. 6.). Thus, in order to carry out the arrangement project, the aim was to bring to the landscape some hedges of evergreen species such as *Cupressocyparis leylandii*, and to add color splashes chromatic games of hedges of *Berberis thunbergii* were created.



Fig. 6 The vegetal material used in the arrangement of the hedge a. *Berberis thunbergii*, b. *Cupressocyparis leylandii*

All the proposed plant compositions were made respecting the principle of unity in diversity. Thus, by using the hedge that fulfills the role of masking and delimitation, the purpose of the arrangement proposal was achieved.

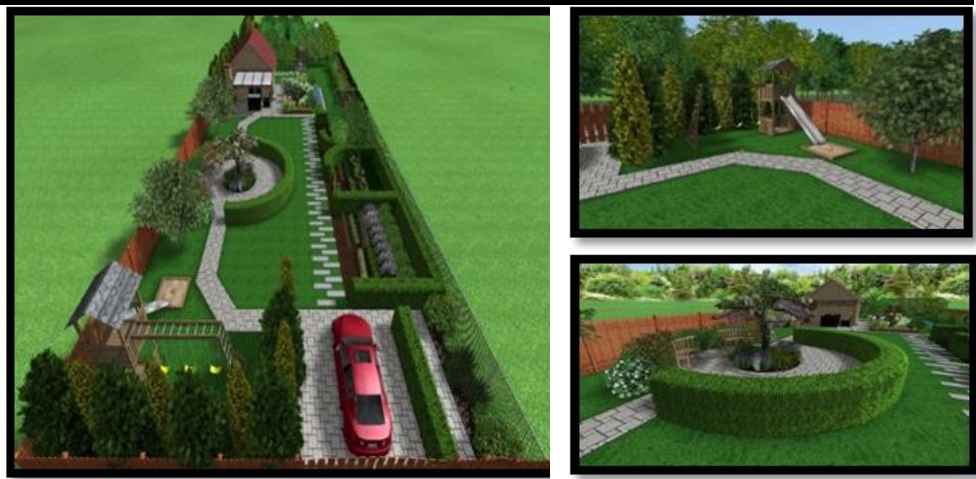


Fig. 7. Systematization of the green space in the arrangement located in Vaslui County

CONCLUSIONS

From the results obtained after researching the roles of hedges in landscaping and based on the proposed landscaping proposals, we came to the following conclusions:

- Achieving a harmonious arrangement requires the use of coherent plant compositions obtained by knowing the ornamental characteristics of plants but also their biological characteristics and their ecological requirements.

- The most important characteristic of the vegetation chosen for a vegetal fence is the suitability for shaping. This factor becomes essential for obtaining a uniform and compact hedge.

- Also the foliage of the plants must be as dense as possible, with small leaves and preferably persistent, in order to obtain a hedge as compact and decorative as possible throughout the year.

- If we take into account sustainability, it is important that when choosing the species that are part of hedges, we use genera and species with high plasticity when pruning and with high resistance to diseases and pests.

- Plasticity when pruning is important not only to ensure that the plants that make up the hedges do not exceed the space allocated to them, but also to prevent gaps.

- The entire arrangement was designed respecting certain design principles, landscape design but also compositional or color association principles to create a more harmonious solution to enhance the recreational function of the site.

- To provide an image as close as possible to our vision, we used architectural and landscape design programs such as Autocad, SketchUp and Realtime.

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