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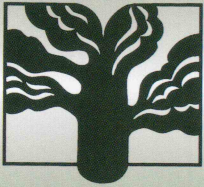


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ЛЕСОТЕХНИЧЕСКИ УНИВЕРСИТЕТ
ФАКУЛТЕТ ПО ЕКОЛОГИЯ И ЛАНДШАФТНА АРХИТЕКТУРА
КАТЕДРА "ПАРКОВО И ЛАНДШАФТНО ПРОЕКТИРАНЕ"
КАТЕДРА "ПАРКОВО И ЛАНДШАФТНО СТРОИТЕЛСТВО"

60 години

специалност

ЛАНДШАФТНА АРХИТЕКТУРА

Доклади от юбилейна научна конференция

21 април 2011

София



КАМАРА НА АРХИТЕКТИТЕ В БЪЛГАРИЯ
Регионална колегия София - град
Архитектурна колегия на ландшафтните архитекти



Съюз на
ландшафтните
архитекти

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JUNIPERUS SP. AS LIVING GROUNDCOVERS IN LANDSCAPE DESIGN IN MACEDONIA

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Abstract

The purpose of landscape design is to organize the outer space of functional and aesthetic way. Landscape design is a complex work, a combination of art and science. It is necessary to know the basic principles and rules to use elements of landscape design. Groundcovers are one of them. There are living and nonliving groundcovers. Living groundcovers due to the large number of useful functions and decorative value are appreciated and frequently used in landscape design throughout the world. There are many species of plants used as living groundcovers and everyday are created new varieties and cultivars. Among them are many representatives of the genus *Juniperus* with prostrate form. They are numerous, but only some of them are used in landscape design of green areas in Macedonia.

Keywords: landscape design, living groundcovers, genus *Juniperus*, varieties, cultivars, prostrate form, green areas, Macedonia

INTRODUCTION

In landscape design there is a need of using groundcovers. Ground under the plants is often left bare or uncovered that has its positive side, but because of susceptibility to erosion, the need for regular maintenance, frequent cultivation and cleaning of unwanted herbs, interest for using groundcovers is increasing. They might be living and nonliving groundcovers. There are a number of groundcover plants and everyday are created new varieties and cultivars. Because of the high variability of color, size, shape, flower, texture and speed of covering their use is growing. They have their own advantages and disadvantages. The advantages include the basic biological and ecological functions they do like a plant. They clean the air, enrich it with oxygen, absorb heat and reduce temperature extremes. They protect the soil from erosion, absorb dust and improve the visual effect with the natural color, form and texture. They create effects of contrast or harmony with the height and variable color at different times of the year. Main disadvantages that living groundcovers have are that they require regular maintenance like pruning, cleaning and watering. Also depending on plant species, it can take up to several years for small groundcover plants to become established and to cover an area.

Spreading shrubs of *Juniperus* genus are included among the groundcover plants. There are many more species, varieties and cultivars highly prized in landscape design. They are used as living groundcovers very often everywhere in the world, but only some of them are used in Macedonia.

SUBJECT AND PURPOSE OF THE RESEARCH

Subject of research are representatives of the genus *Juniperus* used as living groundcovers in landscape design in Macedonia. The purpose of research is analyses of their basic characteristics and needs for proper development of which depends the formation of quality and decorative groundcover.

WORKING METHOD

The working method involves finding the representatives of the genus *Juniperus* which are used like groundcover plants in Macedonia. After being located in separated green areas and in some garden centers, the plants were determined. Their basic morphological features and conditions necessary for their successful development were processed. The research was also established individual development of species, to which height and width they grow, the speed of growth and the corresponding distance at which plants are planted from one another in order to form a decorative and quality groundcover.

RESULTS AND DISCUSSION

Family: Cupressaceae

Subfamily: Juniperoideae

Genus: *Juniperus*

This genus contains about 60 species from which most are shrubs or small trees. They are coniferous evergreen plants, extremely adaptable and tolerant on climate conditions in the urban environment. The genus is characterized by enormous variability. The representatives have different morphological charac-

teristics but all of them have slow to medium growth. They tolerate temperature of -40°C, heat, dryness and pruning. They prefer dry or moist but well drained soil. They can also live on poor soils with variable pH medium. Only they do not tolerate is full shade and moist places. There is a wide variety of Juniper forms grown as landscaping plants. Their fruits are small blue balls and they all have fine or semi fine texture. In landscape design they can be used like groundcovers, in group or like focal points.

Many spreading shrubs of Juniperus genus are used like groundcovers. Thanks to the easy adaptability and high decorative value, they are included among the most frequent groundcover plant species. In Macedonia some of these spreading shrubs were used long time ago, but in the last ten years with development of landscape design, interest for them has increased. The research noted that a lot of cultivars are used in private gardens or in front of public buildings, but also some of them can be seen in public parks. Cultivars that are commonly found in Macedonia are shown in Table 1 and Picture 1.

These cultivars and some of their basic characteristics, their color at different time of the year and their size are shown in Table 2.

In use of spreading junipers like groundcover plants, if we want to make great decorative effect which is very important in landscape design, it is necessary to take care of needs and conditions required for proper development. The plant species, color, shape and height are most appropriate for landscape designer to achieve the desired effect. Therefore it is necessary to respect the basic principles of landscape

Supplement

Table 1

Section	Genus and species	Cultivars
Sectio Caryocedrus		
Sectio Oxycedrus	Juniperus communis	'Green Carpet' 'Repanda'
	Juniperus squamata	'Blue Carpet' 'Blue Star'
Sectio Sabina	Juniperus sabina	'Tamarixifolia'
	Juniperus horizontalis	'Andorra Compacta' 'Blue Chip' 'Prince of Wales' 'Wiltonii' 'Bar Harbor'
	Juniperus procumbens	'Nana'
	Juniperus chinensis	'Old Gold' 'Pfitzeriana Glauca' 'Pfitzeriana Aurea' 'Mint Julep'

design and certainly it is important for landscape designer to have natural talent and sense of beauty and aesthetics. However at first the most important is to have great conditions for plants proper development.

It is already mentioned that spreading junipers only do not tolerate full shade and moist places. The research reported that in that conditions the root of plants is rotting. The foliage became darker and rotted and plants lose their decorative features. Ideal conditions for proper growth and development of junipers are simple but the quality of groundcover also depends of planting distance between plants. This distance depends on maximum size that they

Table 2

Cultivars	Size		Color	
	Height	Spread	Summer	Winter
<i>J. communis</i> 'Green Carpet'	0,5-0,7 m	1,5-1,8 m	Bright green	Green
<i>J. communis</i> 'Repanda'	0,3-0,4 m	1,5-2,0 m	Deep green	Deep green with bronze overtone
<i>J. squamata</i> 'Blue Carpet'	0,4-0,5 m	2,0-2,5 m	Blue	Blue
<i>J. squamata</i> 'Blue Star'	0,6-1,0 m	1,0-2,0 m	Silvery blue	Silvery blue
<i>J. sabina</i> 'Tamarixifolia'	0,6-0,8 m	2,0-2,5 m	Green	Green
<i>J. horizontalis</i> 'Andorra Compacta'	0,3-0,4 m	1,5-2,0 m	Grey green	Bright purple
<i>J. horizontalis</i> 'Blue Chip'	0,2-0,3 m	1,0-1,2 m	Silvery blue	Purple
<i>J. horizontalis</i> 'Prince of Wales'	0,1-0,2 m	0,8-1,0 m	Green blue	Purple
<i>J. horizontalis</i> 'Wiltonii'	0,1-0,2 m	1,0-1,5 m	Blue	Purple
<i>J. horizontalis</i> 'Bar Harbor'	0,3-0,4 m	1,5-2,0 m	Deep blue	Purple
<i>J. procumbens</i> 'Nana'	0,3-0,4 m	1,0-1,5 m	Dark green	Green purple
<i>J. chinensis</i> 'Old Gold'	1,0-1,2 m	2,5-3,0 m	Golden yellow	Yellow
<i>J. chinensis</i> 'Pfitzeriana Glauca'	2,0-3,0 m	3,0-4,0 m	Silvery blue	Purple blue
<i>J. chinensis</i> 'Pfitzeriana Aurea'	2,0-3,0 m	3,0-4,0 m	Yellow	Green yellow
<i>J. chinensis</i> 'Mint Julep'	1,5-2,0 m	2,5-3,0 m	Bright green	Bright green



J. communis 'Green Carpet'



J. communis 'Repanda'



J. squamata 'Blue Carpet'



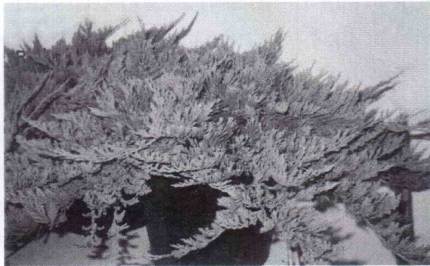
J. squamata 'Blue Star'



J. sabina 'Tamarixifolia'



J. horizontalis 'Andorra Compacta'



J. horizontalis 'Blue Chip'



J. horizontalis 'Prince of Wales'



J. horizontalis 'Wiltonii'



J. horizontalis 'Bar Harbor'



J. procumbens 'Nana'



J. chinensis 'Old Gold'



J. chinensis 'Pfitzeriana Glauca'



J. chinensis 'Pfitzeriana Aurea'



J. chinensis 'Mint Julep'

Picture 1

can reach in width, speed of growth, time in which we want to achieve the effect and plans for maintenance.

The research noted that in Macedonia planting distance between spreading junipers is less than adequate (0,3-0,6 m) and rarely more. Some of the reasons for this are material profit, ignorance or lack of expertise and the wishes of the owner of greenery to create a faster effect. In any case none of these reasons are justified. Although this creation at the beginning provides good visual effect, for the short time especially if there is no regular maintenance, the decorative features are damaged and the plant health is destroyed. The research noted that small planting distance provides bad evaporation, bad conditions for growing, plants diseases and rotting. In these cases it is recommended reduction by removing some plants.

Planting distances that we recommend between processed cultivars of the genus *Juniperus* are shown in Table 3. Plants planted on these distances can form full groundcover in more than 3 years depending on plants species and conditions. That does not mean that plants can be planted at less distance, but if so groundcover must be regularly maintained with reduction of plants. Also compact groundcover will be formed if plants are planted at a distance which represents the maximum width of their growth. In this case the full effect will be after 10 years.

The research noted that most of the processed cultivars are found only in private gardens or in front of public buildings. Only some of them are present in public parks. Those are: *J. sabina* 'Tamarixifolia', *J. horizontalis* 'Andorra Compacta', *J. chinensis* 'Old Gold', *J. chinensis* 'Pfitzeriana Glauca', *J. chinensis* 'Pfitzeriana Aurea' and *J. chinensis* 'Mint Julep' and very rarely any of the other cultivars.

CONCLUSION

The research of representatives of genus *Juniperus* with prostrate form and their use as living groundcovers comes to conclusion that there are many cultivars but only some of them are used in Macedonia. They are shown in Table 1.

These plants tolerate temperature of -40°C, heat, dryness and pruning. They prefer dry or moist but well drained soil. They can also live on poor soils with variable pH medium. Only they do not tolerate is full shade and moist places. They have slow to medium growth. Thanks to the easy adaptability and high decorative value interest for them grows daily. These cultivars which are found in Macedonia and some of their basic characteristics, their color at different time of the year and their size are shown in Table 2.

The research noted that most of the processed

Table 3

Cultivars	Planting distance
<i>J. communis</i> 'Green Carpet'	0,6-1,0 m
<i>J. communis</i> 'Repanda'	0,6-0,8 m
<i>J. squamata</i> 'Blue Carpet'	1,0-1,5 m
<i>J. squamata</i> 'Blue Star'	0,5-0,7 m
<i>J. sabina</i> 'Tamarixifolia'	1,0-1,5 m
<i>J. horizontalis</i> 'Andorra Compacta'	0,9-1,2 m
<i>J. horizontalis</i> 'Blue Chip'	0,5-0,7 m
<i>J. horizontalis</i> 'Prince of Wales'	0,5-0,7 m
<i>J. horizontalis</i> 'Wiltonii'	0,6-0,8 m
<i>J. horizontalis</i> 'Bar Harbor'	0,8-1,2 m
<i>J. procumbens</i> 'Nana'	0,5-0,7 m
<i>J. chinensis</i> 'Old Gold'	1,0-1,6 m
<i>J. chinensis</i> 'Pfitzeriana Glauca'	1,2-1,8 m
<i>J. chinensis</i> 'Pfitzeriana Aurea'	1,2-1,8 m
<i>J. chinensis</i> 'Mint Julep'	1,0-1,6 m

cultivars are found only in private gardens or in front of public buildings. Only some of them are present in public parks.

Planting distance between spreading junipers in Macedonia is less than adequate that can cause a rapid destruction of living groundcover. Planting distances that we recommend between processed cultivars of the genus *Juniperus* are shown in Table 3.

The research of representatives of genus *Juniperus* with prostrate form and their use as living groundcovers in Macedonia allow as to conclude that they are the most popular spreading plants with that purpose.

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