

STUDY CASES REGARDING LANDSCAPING DESIGN IN FAMILY VEGETABLE GARDENS

STUDII DE CAZ REFERITOARE LA FOLOSIREA DESIGN-ULUI PEISAGER ÎN CULTURA LEGUMELOR

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***Abstract.** The paper presents an analysis of Romanian household vegetable gardens, based on ornamental criteria and specific vegetable growing technologies characteristic to these plant displays in cultivation. The weak and strong points of the studied vegetable gardens were marked out through a SWOT analysis and based on it solutions were elaborated to improve them on an aesthetic, technologic and workable level in accordance with specialized literature. The obtained results offered unity, balance and an increasing aesthetic value to the plant display, participating in an active matter to the enlargement of their sustainability degree.*

Key words: Vegetable garden, plant display, sustainability

***Rezumat.** Lucrarea prezintă o analiză a grădinilor legumicole de tip familial de pe teritoriul țării noastre, realizată pe baza criteriilor de design ornamental și pe baza tehnologiei de cultură specifică acestor dispozitive de dispunere a plantelor în cultură.*

Prin intermediul analizei de tip SWOT au fost analizate punctele forte ale grădinilor legumicole luate în studiu, dar și cele slabe și au fost elaborate soluții pentru îmbunătățirea acestora din punct de vedere estetic, practic și tehnologic conform literaturii de specialitate.

Rezultatele obținute au oferit unitate, echilibru și o valoare estetică mărită dispozitivelor de dispunere a plantelor în cultură, contribuind activ la creșterea gradului de sustenabilitate a acestora.

Cuvinte cheie: grădină legumicolă, dispunerea plantelor, sustenabilitate

INTRODUCTION

Nothing compares with the benefits that a garden can give you. Growing fruits, vegetables, flowers and herbs combines sport with the pleasure of working in fresh air, relaxing and admiring your work. Seeing your garden develop brings a smile on your face and an achievement of happiness, that only working in a garden can give you (Greenwood, 2008).

From a piker to a grower, man over time has passed many steps, helped by the evolution of crop technology, the large number of species in our days and accessibility to information.

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According to landscaping design specialists, the family vegetable garden, is an important element that must be designed in the same style as the main ensemble. The proposed species must be complementary with the main buildings, in the same stylistic lines, when it comes to color and shape (*habitus*). By applying landscape design rules the vegetable garden is given an ornamental character, with many functions (Sima, 2009; Iliescu, 2008).

As time passed family vegetable gardens have evolved due to the desire to grow more species and terms such as crop rotation are indispensable for a true grower. Stan *et al.* (1999, 2003) describes the importance that crop rotation has in family vegetable gardens due to its multiple advantages, reducing chemical use.

The garden “represents an ensemble of heterogenic elements bound by different relations between them, it’s a structure” (Constantinescu, 1992). Combining flower and crop technology with landscape design rules represents one of our objectives in designing sustainable ornamental vegetable gardens using an intercropping system.

The present study case takes into analysis three family vegetable gardens from different parts of the country, with the objective of increasing their ornamental value and sustainability, by applying the correct crop technology.

MATERIAL AND METHOD

For achieving the purpose and objectives of this paper, three family vegetable gardens from Bistrița-Năsăud county and Cluj county were studied. Due to the less favorable location for vegetable growing in the process of designing the vegetable gardens, geological, climatic and cultural factors were taken into consideration by owners. The surface of the family vegetable gardens is from 100 to 260 m².

The biological material used by the owners in the vegetable garden was represented by common and local species, such as tomatoes, peppers, white cabbage, carrots and many more.

Based on landscape design rules and vegetable growing technological criteria’s aspects such as fertilization, carrying works for plants and ornamental value were analyzed.

The family vegetable gardens were analyzed using SWOT analyses, which underlined the strengths and weakness of the studied gardens giving possibility to enhance the ornamental value by applying to correct technological plant requirements.

The applied working methods for evaluating the studied family gardens were case study, observation and SWOT analysis.

RESULTS AND DISCUSSIONS

a. Case study 1.

Based on technological plant requirements, landscape design rules and functionality of the family vegetable garden, using SWOT analysis (tab. 1) for the existing garden, solutions for enhancing the ornamental value of the first garden were elaborated.

SWOT analysis based on the existing garden in case study 1.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Many vegetable species • Bio vegetables • Usesown fertilizers • Crop rotation • Intercropping system • Using trap crops • Systematized garden 	<ul style="list-style-type: none"> • Low ornamental value • Planting distances not respected • High degree of weed seeds in the soil due to neglect from the neighbours gardens • Leaving to many suckers on the tomato bush
Opportunities	Threats
<ul style="list-style-type: none"> • Appling an intercropping system – increasing sustainability of the garden • Increasing the activity of the soil microorganisms by using organic fertilizers • Increasing ornamental value by applying design rules 	<ul style="list-style-type: none"> • Due to incorrect planting distances the possibility of disease attack is much higher • Small planting distances can clog caring works in the garden • The many sucker left on the tomatoes can reduce sun light and produce fruits much smaller than normal

Due to its mixt style, the family vegetable garden, gives the opportunity to create different points of attraction, using different colors, volume and textures that the proposed species have, which will enhance the unity of the garden, unifying the three visual plans (fig. 1).



Fig. 1 Perspective of the proposed solutions

The habitus of the species proposed in the vegetable garden, in an intercropping system, pepper + garlic, celery + leaf cabbage + garden nasturtium, lettuce + onion + lavender, creates a “game” of color, enhancing the ornamental value.

By applying an intercropping system that respects the technological requirements for vegetable species and design rules, the vegetable garden has new functionalities such as aesthetic and social ones.

Intercropping vegetables with different floral species, such as French marigold + tomatoes + lavender, can have a beneficial effect on their

development, a positive reaction, known as allelopathy, reducing the number of pests attack (fig. 2).



Fig. 2 Details of the proposed solutions

b. Case study 2.

The second garden studied from a technological point of view, was better developed, with simple lines, realized in a geometrical style, with a small slope (3-4 %) that gives the opportunity to create different levels of perception, creating the opportunity to enhance its ornamental value and the impact that it has on the environment (tab. 2).

Table 2

SWOT analysis in case study 2

Strengths	Weaknesses
<ul style="list-style-type: none"> • Vegetable garden watered using drip irrigation • Local varieties used in garden • Crop rotation • Organic fertilizer was used • The tomatoes were correctly trimmed • Systematized garden • Using successive crops 	<ul style="list-style-type: none"> • Low ornamental value • Planting distances not respected • The usage of insecticides • No support for cucumbers • A high degree of weeds in the surrounding areas
Opportunities	Threats
<ul style="list-style-type: none"> • Increasing the ornamental value by intercropping vegetables with flowers, which can lead to a low degree of pest and disease attack • Increasing soil fertility by using an intercropping system • Increasing ornamental value by applying design rules 	<ul style="list-style-type: none"> • A lower number of bees due to the usage of insecticides • Small planting distances can cause an inconsonant development • Due to incorrect planting distances the possibility of disease attack is much higher

Based on the existing SWOT analysis by applying aesthetic and compositional principles and by using an intercropping system a compositional unity and a visual balance can be created. Intercropping vegetable species with flowers, tomato + purple basil + lettuce, creates harmony and decreases the number of diseases and pest in the vegetable garden (fig. 3).



Fig. 3 Detail of the proposed design for the vegetable garden in case study 2.

c. Case study 3.

Situated in the 3rd vegetable growing area in the country, which is less favorable for the development of vegetables, the family garden is systemized, shaped as a square (10 x10 m), surrounded by fruit trees, which actively contribute to the biodiversity of the area.

The vegetable family garden was well taken care of, based on plant requirements that assured a good development of the species that were present. From an ornamental point of view the studied vegetable garden was designed respecting general landscaping principals and functions, presenting potential for improvement of the aesthetic value (tab. 3.).

Table 3

SWOT analysis for the existing vegetable garden

Strengths	Weaknesses
<ul style="list-style-type: none"> • Many local species used • Bio vegetables • No fertilizer used • Crop rotation • Systematized garden with a slight ornamental value • Snails and slugs eliminated using running Indian ducks • Correct planting distances • Well cared plants 	<ul style="list-style-type: none"> • Low ornamental value • A high degree of weeds in the surrounding areas
Opportunities	Threats
<ul style="list-style-type: none"> • Applying an intercropping system – increasing sustainability of the garden • Increasing the activity of the soil microorganisms by using organic fertilizers • Increasing ornamental value by applying design rules 	<ul style="list-style-type: none"> • In time the soil resources will decrease if no organic fertilizers are used

By applying an intercropping system, the number of vegetables found in the garden will grow, the different habitus and color of the species will increase

the ornamental value, giving originality to the composition and a higher degree of sustainability for the garden (fig. 4).



Fig. 4 Detail of proposed intercropping system

Introducing flowers and herbs in the garden will decrease the number of pest and disease attacks, increasing in the same time the ornamental value of the garden, providing educational and health functions to it.

The studied family vegetable gardens are systemized with a low ornamental value. By applying the proposed solutions, based on landscape design rules and vegetable growing technology, they will become unifying aesthetic elements of the family garden.

CONCLUSIONS

Attractive perspectives were created through the usage of visual cues, of colors and volumes, which lead to an increase in compositional unity and also regarding the sustainability of the family vegetable gardens.

The proposed solutions for the three case studies increase the functionality, the technical and ornamental values of the garden.

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