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SUSTAINABLE VEGETABLE GARDENS IN ALLOTMENT SYSTEMS

INTRODUCTION

Vegetable gardens in an **allotment system** have a long history in Europe, ever since the industrial revolution, when people migrated to cities, in the 19th century, this type of gardens were called “workers gardens” or “poor’s’ gardens”.

In Romania, vegetable gardens in allotment systems (family gardens) have large plots from 90 m² to 500 m² or more depending if the garden is situated in a peri-urban area. Community gardens or collective gardens are small, about 10 m², situated near the residential building and are mainly used for flowers and decorative shrubs.



The aim of this study is to analyse the necessities and opportunities regarding **vegetable cultivation** in **home gardens** in the N and NE of Romania, and to increase their **ornamental value** by using an intercropping system.



MATERIAL AND METHODS

To reach the aim and objectives of this research a series of case study were analyzed and some experimental trials were carried out.

Three experimental ornamental vegetable gardens were done in the experimental field of The vegetable growing Department.

The proposed **vegetable gardens** had an area between 20 m² and 100 m², designed in a geometrical style, using design and aesthetic rules. The **three family gardens** were evaluated by a **panel of 20 experts**. Using a survey with 17 affirmations, with a scale from 1 to 5, in which 1 represented highly disagree, 2 represented disagree, 3 represented neutral, 4 represented agree and 5 highly agree.



The achieved results from evaluating the **three ornamental vegetable gardens** by the panel of experts was then assessed using **SWOT analysis** to determine the degree of **general agronomical and ornamental value** of the proposed family gardens.



RESULTS AND DISCUSSIONS

Based on the results of our previous studies regarding **landscaping design in family vegetable gardens** we were able to determine the needs of a family when it comes to vegetables, which species are used and how people interact with each other when it comes to exchange of products or seed.

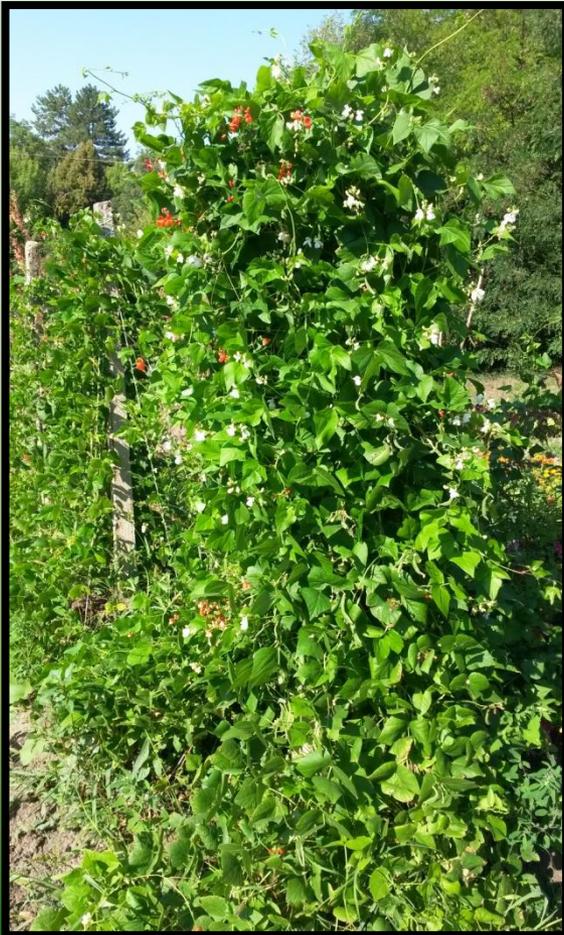


Case study 1.

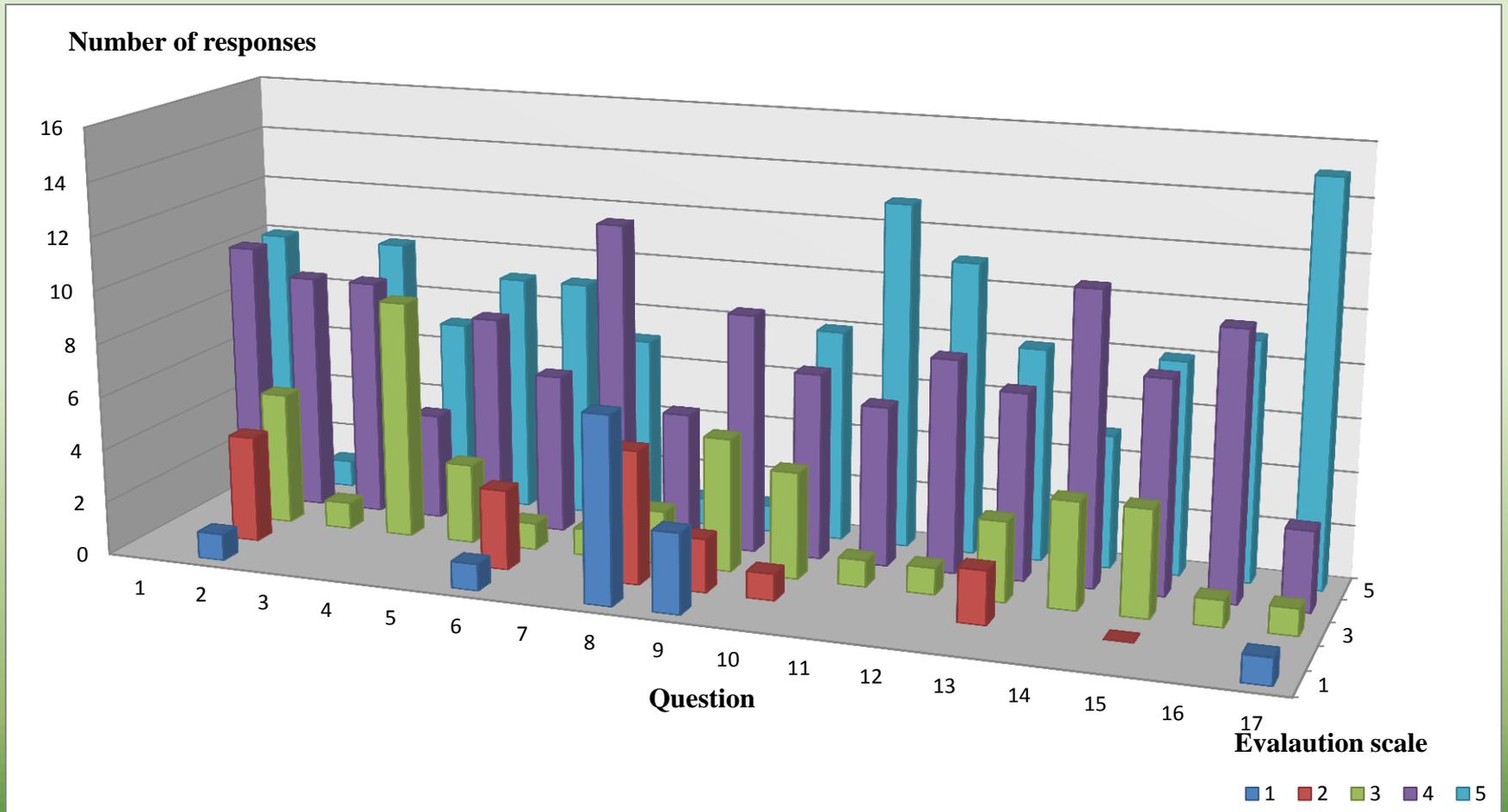
The first experimental family vegetable garden studied has an area of 20 m² and is designed in a **geometrical style**, respecting **crop technology** and **landscape design principles** for the proposed species. Based on compositional elements such as rhythm, symmetry and prime axis the vegetable garden decorates through the flower created using May King and Lollo Rosa lettuce.



Using an intercropping system the garden gives to opportunity to decorate for a longer period due to the combining method and plant succession. The vegetable garden has combined lettuce + spinach + onion + lavender + red orach in the first part of the year and runner bean + pepper + celery + autumn carrot + lavender in the second part of the year.



Survey response analysis



Using **SWOT analysis** for the evaluation of the survey the strong points, the weak point, the opportunities and threats were revealed :

SWOT Analysis- First study case

Strenghts	Weaknesses
<ul style="list-style-type: none"> • the proposed species were well adapted to the area and were easy to care for; • the ornamental vegetable garden was economical; • the garden has a high ornamental and recreational value; • the degree of weeds was low due to the intercropping system; • a lower risk for deseas atack due to the combing method; • the garden asures fresh vegetables for a long period; 	<ul style="list-style-type: none"> • medium productivity; • a low number of species used;
Opportunitis	Threats
<ul style="list-style-type: none"> • education function for the young generation; 	<ul style="list-style-type: none"> • moderated plant needs regarding soil nutrientd for the combined species; • the posibility of incompatibility side-effects due to plant combination;

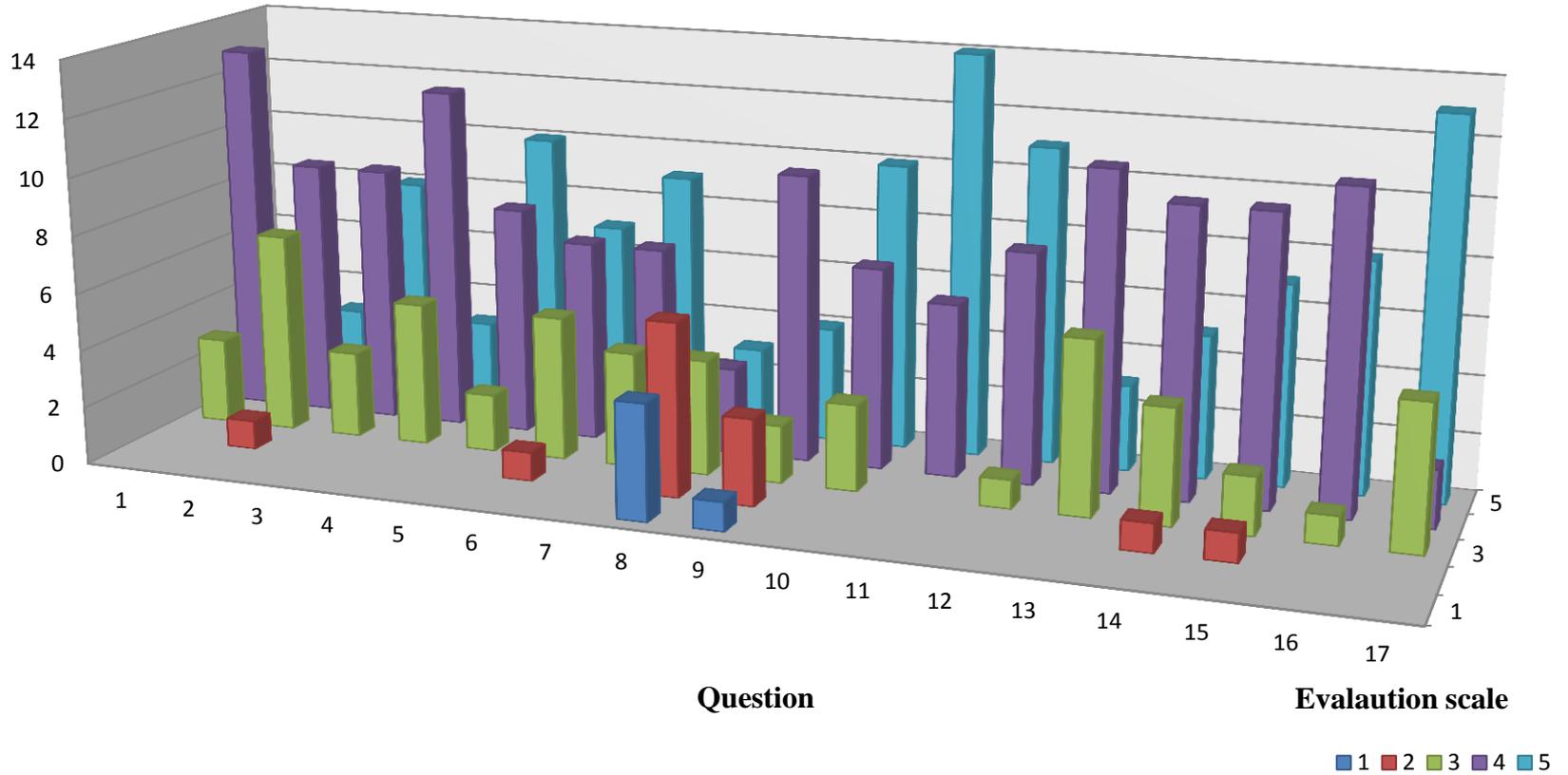
In its composition the vegetable garden had 3 combination of plants:

1. Lollo Rosa lettuce + cherry tomatoes (yellow, red and striped purple) + French marigold + leave parsley + basil (green and purple);
2. cauliflower (green, white, purple) + celery+ tropeolum;
3. lettuce + beans + tropeolum;
4. cherry tomato + carrots (in the second part of the year);



Survey response analysis

Number of responses



The responses from the survey done by the 20 specialists were then analysed using SWOT analysis and the strong points and opportunities were unlined

SWOT Analysis- Second study case

Strengths	Weaknesses
<ul style="list-style-type: none"> • the chosen species are well adapted to the area and easy to care for; • high ornamental and recreational value; • a lower risk for diseases attack due to plant combination; • a relatively large number of species used in the garden; • cultural function; • favourable conditions for useful entomofauna; • alternative methods of plant protection; 	<ul style="list-style-type: none"> • side-effects due to plant combination; • the degree of weeds in the garden if proper care is not done in time;
Opportunities	Threats
<ul style="list-style-type: none"> • horticultural education for the young generation; • fresh vegetables for a long time; • encourages communication in the community; 	<ul style="list-style-type: none"> • economical rentability;

Case study 3.

The third vegetable garden is designed in a **mirror style**, with a surface of 48 m². The main alee separates the garden in two equal rectangles. Combining **landscape instruments with plant technology** and by respecting plant nutrients conditions, the proposed design creates coloured perspectives, symmetry and equilibrium in the garden .

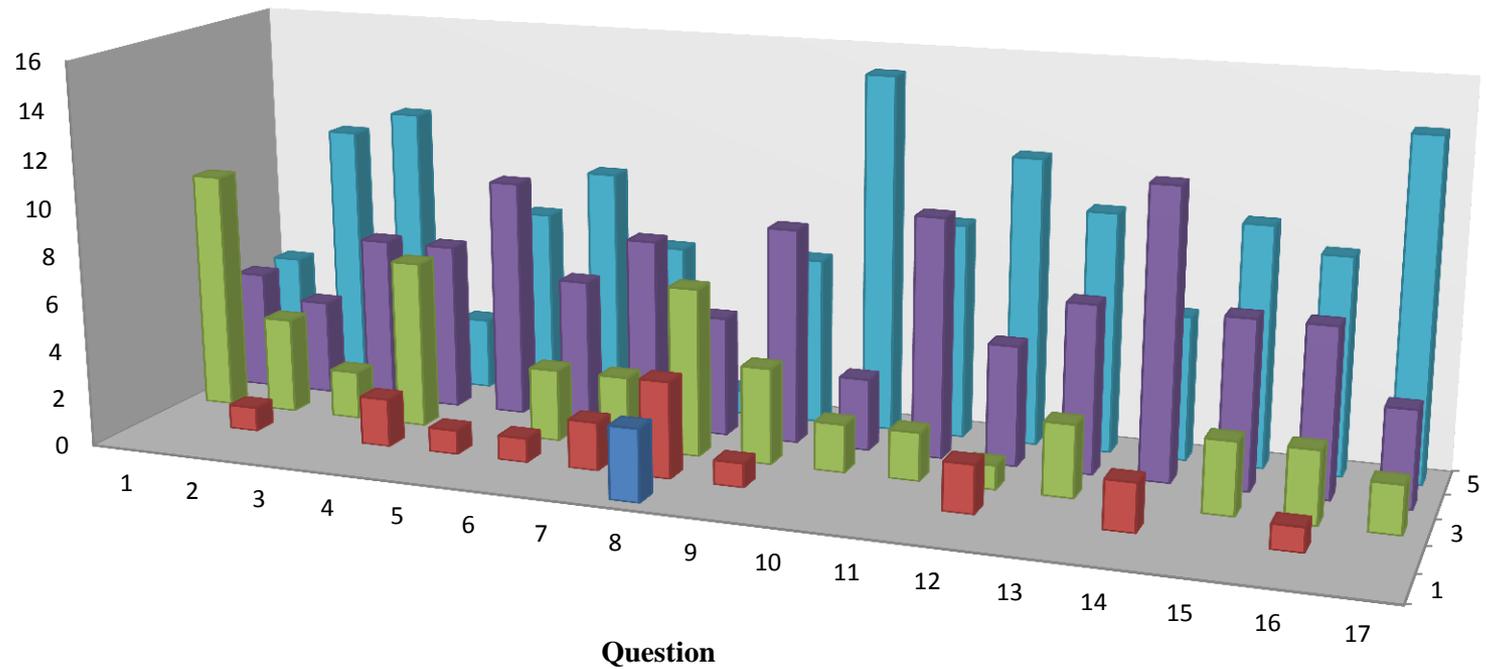


For the design there were used 16 plants (lettuce, spinach, runner bean, pepper, tomato, carrot, celery, egg plants, leaf parsley, lavender etc.) in 10 different combinations.



Survey response analysis

Number of responses



Evaluation scale



SWOT Analysis- Third study case

Strenghts	Weeknesses
<ul style="list-style-type: none">• the chosen species are well adapted to the area;• high ornamenatal and recreational value;• a lower risk for diseas attack due to plant combination;• a relatively large number of species used in the garden;• altenative methods of plant protection;• economical rentability;• high biodiversity;	<ul style="list-style-type: none">• care practices for the used plants;• plant nutrient uptake;
Opportunites	Threats
<ul style="list-style-type: none">• horticultural education for the young generation;• encourages communication in the community;	<ul style="list-style-type: none">• side-effects due to plant combination;• the degree of weeds in the garden if proper care is not done in time;

CONCLUSIONS

1. The results of the study revealed that **family vegetable gardens** in the urban and peri-urban area, in an intercropping system, **help the general sustainability of community and contribute to a “healthy life style”**.
2. By using an **intercropping systems** the gardens had a **low risk of disease attack**, assuring **fresh vegetables** for a long time.
3. The gardens have **ornamental value** and encourage **recreation** and spending time in nature and also **helps the education** of the young generation on horticultural practices.



Thank you!

