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POSITIVE ASPECTS OF AN ORNAMENTAL VEGETABLE GARDEN AND ITS EFFECTS TOWARDS FAMILY AND COMMUNITY SUSTAINABILITY

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Abstract

Sustainability is based on three important pylons, the environment, the social component and the economic component. Design based on landscape principles and rules and by applying the correct crop technology, the vegetable garden presents many functions, which increase its impact on the community and on the environment. To reach the aim and objectives of this research based on the obtained results during 2015-2017 regarding crop productivity, plant development, economic aspects and ornamental criteria a survey regarding sustainability of the vegetable garden was done. From an economic point of view, the studied garden has a positive impact on the family budget. The garden also has a big impact on the owners bringing benefits to their health and also on the education of the young generation regarding horticultural practices. The results of the study show that the ornamental vegetable garden, design in an intercropping system has a positive impact on the owners, contributing to the sustainability of the community and its surroundings.

Key words*: function, family garden, aesthetic.*

INTRODUCTION

The first vegetable gardens were situated on the valleys of Tigre, Eufrat and Indus rivers (Iliescu, 2008), initially their purpose was to offer fresh vegetables and, in some celebration, they had an ornamental use (Sima, 2009).

Landscape design is a phenomenon that was used in vegetable growing for a long time, due to the desire to create an area where you can relax and admire beautiful views. This landscape offers food for the body and soul (Galea et al., 2017).

Father Ignatius said „a garden should look like a beautiful arranged table". In a vegetable garden, the soul of the owner is represented by an element in the design, usually a flower (Sima, 2017).

In public spaces, in Romania, ornamental vegetable garden are rare, but because of the importance that vegetable crops have and the desire for healthy vegetables in private gardens, this type of design has slowly entered Romanian households (Galea, 2017).

Vegetable plants have many ornamental elements that in an intercropping system are underlined and contribute to the general aesthetic of the garden. An intercropping system besides its ornamental values has a positive impact in attracting useful insects.

Using this system in a family vegetable garden can have many advantages that can have a good impact on the community and on the environment.

In this context, the paper presents an analysis of the effects of an ornamental vegetable garden on the sustainability of the family and community in which it exists, in the period 2014-2017.

MATERIALS AND METHODS

In order to reach the aim and the objectives of this research six experimental gardens were conceived and based on the analyses obtained in different studies (Galea et al., 2017) one garden was chose as the best from an ornamental and sustainable point of view.

The experimental garden was done/ established in the experimental field of the vegetable growing department from USAMV Iasi, between 2014-2017.

The studied family ornamental vegetable garden was designed in a geometrical style with

a planted area of 100 m^2. The family garden was evaluated by a panel of experts in a survey regarding its ornamental value and in another, regarding its sustainability value. The two surveys had scale from 1 to 5, in wich 1 represented highley disagree, 2 represented disagree, 3 neutral, 4 agree and 5 represented higly agree.

In the composition of the surveys were taken into consideration the following: the combining method, the proposed species, the ornamental layout, garden functions (educational, cultural etc.), the influence of the used intercropping system on plant growth, development and production, pest and disease attack.

The achieved results were evaluated using SWOT analysis to help determine the dree of ornamental and agronomical value.

From an economic point of view, plant production and production quality was assessed.

Due to the fact that the vegetable garden has in its composition 34 different vegetable plants (13 intercropping systems), 6 samples (tomatoes, hot pepper, eggplant and squash) were analysed regarding production quality using the device DR 301-95 (digital refractometer-for sucrose) and a vacuum drying oven (for dry substance and humidity).

In order to realize the purpose of this study, besides increasing the ornamental value, one the main objectives was to increase the impact of the vegetable garden on its owners and on the environment.

RESULTS AND DISCUSSIONS

The climatic conditions from the experimental field were suitable for vegetable growing. From a development point of view the habitus of the plants was harmonious.

The chosen intercropping systems had a positive impact on plant production (Table 1). The average values obtained for the studied plants were close to the values found in the existing literature (Stan et al., 2003; Stan and Munteanu, 2001; Fălticeanu and Munteanu, 2003; Savițchi et al., 2013; Multeanu, 2003; Ciofu et al., 2003; Carvalho et al., 2012; Tringovska et al., 2015; Tincă, 2011; Hamburdă, 2015; Bavec et al., 2010). The results optained regarding chemical composition, of the six analyzed samples had values in line with those in known literature, fact that proves that the applied intercropping system has an evident effect in obtaining a qualitative production (Table 2).

The percentage of sucrose for cherry tomatoes varied from 6.09% for Aristan purple bumble bee cv. to 8.15% for Ema de Buzau cv.

Regarding the hot pepper the obtained result were higher than the ones in the known literature with an average value of 8.35%.

The obtained result for egg plants was 3.6-3.8%, values that are in between the known data (2.5-4.0%) (Bodea and Enăchescu, 1984).

Table 1. Comparative results regarding the obtained production

Nr. Crt.	Plant name	Plant production (g)	Standard production (g)
1.	Lollo Rossa lettuce	180 - 200	200-300
2.	Aristan Puple Bumble Bee tomatoe	1380	1500
3.	Beam's yellow pear tomatoe	1200	1500
4.	Ema de Buzău tomatoe	1400	1500
5.	Ovari feher squash	1700	430-450
7.	Bordi pea	3	3
8.	Runner bean	80	70
9.	Thyme	200	125-175
10.	Pascal celery	300-342	120
11.	Black beauty eggplant	3000	900-1800
12.	Kayene pepper	280	63-105
13.	Sweet Thing F1 sweet corn	775	750
17.	Scarlet kale	522	792
18.	Kadet kale	540	792
19.	Chard	3500	41,66
20.	Dalmatziano beans	40	20
21.	Clemson Spineless okra	210	105
22.	Cap de Negru 2 cabbage	2315	1400-1800
23.	Calabrese Natalino broccoli	450	500
24.	De Ciorani hysopus	200	193
25.	Violet basil	190	105-126
26.	Onions	26	26
27.	Piccolo verde di Parigi cucumber	800	1050
28.	Sage	550	360
30.	Di Sicilia Violetto cauliflower	450	480-800
31.	Bulgăre de zăpadă cauliflower	600	480-800
32.	Radish	425	200-300
33.	Pumpkin butternut	10500	10000-12000
34.	Rosa di trevise 4 cicory	220	177-222

Regarding dry matter the values obtained for cherry tomatoes were between 8.09-13.20%. The highest values was for Ema de Buzau cv.

The average values obtained for eggplant were 6.8% for dry matter for Black beauty cultivar and 7.2% for Albe de Buzău cv.

The obtained results for squash had an average of 5.4% for dry matter.

Based on the two surveys the strong points and the weaknesses of the garden were underlined using SWOT analysis providing an overview of the ornamental degree of the garden and over its effects regarding the sustainability of the community and its surroundings.
The obtained results regarding the ornamental value of the studies garden revealed that the ornamental vegetable garden has many functions, with beautiful perspectives. The usage of different intercropping systems (lettuce + runner bean; eggplant + pepper; okra + beans etc.) contributed in a positive way to the ornamental degree (Figure 1).

Figure 1. Garden detail

One of the week point of the garden was represented by the alternative mean of plant protection, that need to be improved (Table 2).

Table 2. SWOT Analysis - Model 6

Strengths	Weaknesses
• many functions; • beautiful perspectives; • the style of the garden enhances the ambiance of the household; • the intercropping system brings aesthetic value;	• alternative mean of plant protection;
Opportunities	**Threats**
• landscape design principles correctly used ; • color and volume game - increased ornamental impact	• reduced communication.

The surveys regarding the sustainability of the ornamental family vegetable garden revealed that according to the panel of experts the garden is considered economically affordable.
The studied intercropping systems had a positive impact on attracting useful insects that had a good influence in plant production (Figure 2).

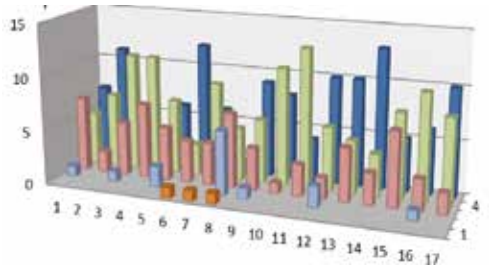

Figure 2. Evaluation forms analysis for garden sustainability degree

Based on the SWOT analysis the garden has many strengths, such as the education of the young generation, high yield, high ornamental value, the increase of useful insects and fresh vegetable for a long period.
The analysis also revealed that the garden needs many carrying practices. By using an intercropping system, the number of disease attack was reduced.
From an economic point of view the obtained results reveal that the highest cost in the ornamental garden were the ones with materials, fallowed by seeds and seedlings cost.
In the first year of study the profit rate was 11 % due to the initial investments (Table 3). The profit rate was obtained din the second year of study.

Table 3 Correlation study between costs and revenue

Nr.crt.	Specification	U.M.	1st year	2sd year	3rd year
1.	Total production costs	lei	1759	1028	1229
2.	Yeald value	lei	1856	1663	1600
3.	Profit	lei	204	635	370
4.	Profit rate	%	11.65	61.77	30.08

CONCLUSIONS

The proposed intercropping systems had a positive effect on plant growth and development. The ornamental perspectives created in the garden were beautiful and contributed to the enhancement of the environment. The many function the garden has (ornamental, aesthetic, cultural and educational) increase community communication and help the owners maintain a healthy life style.

From an economic point of view the ornamental vegetable garden contributes to the economy of the family budget.

By using an intercropping system, the garden offers fresh vegetable for a long time.

REFERENCES

Bavec Martina, Zuljan M., Robacer Martina, Bavec Franc, 2010. White cabbage productivity in inter-cropping production systems. International Horti-cultural Congress on Science and Horticulture for People (IHC 2010): International Symposium on Organic Horticulture: Productivity and Sustainability, Lisbon, Portugal available on-line at https://www.actahort.org /members/showpdf?booknrarnr=933_44.

Bodea C., Enăchescu Georgeta, 1984. Tratat de biochimie vegetală, Partea a II-a, Compoziția chimică a principalelor plante de cultură, vol. V, Legumele, Editura Academiei Republicii Socialiste România, București, 19-107, 123-127.

Ciofu Ruxandra, Nistor N., Popescu V., Chilom Pelaghia, Apahidean S., Horgoș A., Berar V., Lauer K.F., Atanasiu N., 2003. Tratat de legumicultură. Editura Ceres, București 100-200.

Costanda Gabriela (Tincă), 2011. Cercetări privind elaborarea tehnologiilor ecologice de cultivare a unor specii legumicole condimentare și aromatice în condițiile județului Iași, Teză de doctorat, USAMV Iași, 100-215.

Fălticeanu M., Munteanu N., 2006. Plante utile pentru grădina dumneavoastră. Editura Tipo Moldova, Iași, 35-115.

Galea (Deleanu) Florina-Maria, Munteanu N., Stoleru V., Teliban G.C., Gache (Lungu) Mirabela, Hriscu (Maftei) Adriana, 2017.Ornamental vegetable gardens in a family system. Lucrări Științifice, Seria Horticultură, vol. 60, nr. 2, 55-64.

Hamburdă S.B., 2015. Rezultate experimentale în vederea elaborării tehnologiei de cultivare a fasolei mari (*Phaseolus coccineus* L.), Teză de doctorat, USAMV Iași, 120-265.

Iliescu Ana-Felicia, 2008. Arhitectură peisageră. Editura Ceres, București, 25-110.

Sima Rodica, 2009. Legumicultura. Sursă de hrană și potențial ornamental. Editura AcademicPres, Cluj-Napoca, 9-45.

Sima Rodica, 2017. Legumicultură ornamentală, Editura AcademicPres, Cluj-Napoca, 15-25.

Stan N.T., Stan T.N, 2010. Legumicultură generală. Editura "Ion Ionescu de la Brad", Iași, 10-16.

Stan N.T., Munteanu N., 2001. Legumicultură, vol. II. Editura "Ion Ionescu de la Brad", Iași, 10-145.

Stan N.T, Munteanu N., Stan T.N., 2003. Legumicultură, vol. III. Editura "Ion Ionescu de la Brad", Iași, 20 - 156 .

FLORICULTURE, ORNAMENTAL PLANTS, DESIGN AND LANDSCAPE ARCHITECTURE


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