The Role of Plant Clinic in Protecting Vertical Urban Green Spaces in Tehran

Seyed Jamal F Hosseini, Sepideh AzarKamand and Farhad Lashgarara

Department of Agricultural Extension and Education, Science and Research Branch, Islamic Azad University, Tehran, Iran

---

ABSTRACTS

The perception of participants in the plant clinics classes about vertical urban green spaces was discussed in this article. The methodology used in this study involved a combination of descriptive and quantitative research and included the use of correlation, regression and descriptive analysis as data processing methods. The target population for this study consisted participants in the region 7 of Tehran municipality (N=140). The regression analysis showed that dependent variables, interested about vertical green spaces, discussion, adaptation of educational contents with title of courses and clarity of training course's objectives for residence caused 30% of variance on the perception of respondents about role of plant clinics in changing attitudes and increasing knowledge and skills about vertical green spaces as dependent variable.

Keywords: Tehran, Vertical urban green spaces, Plant clinic.

INTRODUCTION

Vertical expansion of green space is now one of the most important issues in the development of metro areas in the world. The new trend toward promoting more vertical green spaces has been the cornerstone of discussion among policymakers. Physical barriers such as urban spaces in front of windows, balconies, terraces, the protective bars, fences is considered a place for developing green spaces. Using the roofs and walls vertically to create green space in European cities now has been highly regarded as a solution to improve the environmental qualities of big cities. Converting the roofs and walls into the green landscape can improve the climate in a neighborhood [1].

In addition to allowing gardeners with limited space to grow a variety of plants, vertical gardening has a number of other benefits. Growing plants can help add shade to your yard. If you have a view you'd like to block or an unattractive structure you'd like to cover, you can use vines and other plants to help disguise these unappealing landscape features. If you grow plants over walls, fences, and trellises, vertical gardening can also add more privacy to your home [2].

255

In recent years, integrative and strategic approaches have been developed and implemented across the globe to promote and develop tree-based resources that cater for multiple urban demands [3].

Evidence shows that even small efforts to increase the knowledge of urban residence about the importance of green spaces can have big results. Therefore, it is necessary to remove the impediments faced by urban population and provide basic information in urban areas to enable the spread of green spaces.

One method is to train and inform the urban population about the importance of green spaces in their daily life would arguably encourage individuals to participate in activities related to the development of green cities. Each country establishes their strategies based on the cultural, economic and political environment. Plant clinics are one of the most common methods of training people in the cities especially in the areas of plant diseases [4].

Each country establishes their strategies based on the cultural, economical and political environments. Plant clinics are one of the most common methods of attracting people in the cities to participate in developing and conserving urban green areas.

The paper is structured as follows. Following this introduction we provide a background to the Tehran. The paper then introduces a context to plant clinics and urban green spaces, before discussing the methodological approach taken. Results are provided and then some policy recommendations are offered.

The first plant clinic in the Tehran was established in 1996 in the region 14 with emphasize on identifying and combating plant pests, increasing the knowledge of residence about green spaces and promoting their participations in protection of green space. In these clinics, classes are being held free and participants are being educated about different subjects in green spaces and residential gardening [5].

Tehran as the largest metropolitan city in Iran with more than 11 million population faces the challenges of growing need for more green spaces. Based on the report by Tehran Parks and Green Space Organization, in recent two decades about 1500 parks were built and urban and peri-urban forests respectively amount to 7,000 and 35,000 hectares, and the green space per capita of Tehran amounts to 7.5 square meters. According to the provisioned programs for 2007-2010, 2,000 hectares of urban green spaces will be established, if the necessary credit is provided, and the urban green space per capita would hit 9.5 square meters [6].

Hosseini and Laing (2011)[4] reported that the amount of green space in Tehran compared with other metropolitan areas is not sufficient. They Cited a study by Kirby (2009) [7]that New York city, for instance, has the largest urban parks in the United States. These parks serve a constituency of 9 million residents.

Dense building in Tehran, causing the temperatures to rise and temperature in the city is 2 to 3 times warmers than the outskirts of cities. Experts indicated that if 5 to 10 percent of the roof of a town to be converted into green spaces, it is adequate enough to improve the quality of the environment.
Region 7 with 1536800 square meters is located in the central part of city and considered among the business and economic regions in Tehran. Based on the latest statistics, the total population is

_____

308445 and 20 persons live in each square meter. In term of green spaces, the amount of green spaces in this region is 190743 square meters and there are 21 parks located in this region.

In a study about the role of plant clinics in sustainability of urban green space in Tehran, respondents indicated that the main success of the plant clinics was in increasing their knowledge about protecting and preserving green spaces (Hosseini and Laing, 2011) [4].

Hosseini (2010) [8] indicated that the training classes by plant clinics had effect on attitudes and skills of residence about protecting green spaces in Tehran. The results of this study show that practical training by clinics has increased knowledge and awareness about protection of urban green space.

Sarvari (2006)[9] in a comparative analysis of two regions in Tehran metropolitan area reported that classes in plant clinics in two regions have changed the attitudes of residents about importance of urban green spaces.

The results of study by Esmaeeli (2007) [10] about the perception of residents in Tehran about role of green spaces in clean environment show the educational classes influenced the skills and knowledge of residents.

Given the key role that plant clinics play in developing green spaces by urban population, examining their role in protecting may be critical for policy makers and city authorities. The research question for this study is: what are the perceptions of urban population about the role of plant clinics in protecting green spaces in the Tehran?

MATERIALS AND METHODS

The methodology used in this study involved a three stage combination of descriptive and quantitative research. Stage one involved a series of in-depth interviews were conducted with experts in the Municipality of Tehran to provide a context.

A questionnaire was developed based on these interviews and relevant literature. Content and face validity were established by a panel of experts consisting of faculty members at Science and Research Branch, Islamic Azad University, and some specialists in the Municipality of Tehran. Minor wording and structuring of the instrument were made based on the recommendation of the panel of experts.

Table 1: Variables and their measurement scale

Variables	Measurement Scale	Cronbach Alpha
Interests about vertical urban green spaces	Five- point Likert	80.0
Educational methods	Five- point Likert	92.0
Effectiveness of training classes	Five- point Likert	76.0
Behavior of residents	Five- point Likert	82.0

The questionnaire included both open-ended and fixed-choice questions. The open-ended questions were used to gather information not covered by the fixed-choice questions and to encourage participants to provide feedback. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used as a quantitative measure.

_____

Stage two involved a pilot study with 30 participants in the plant clinics classes who had not been interviewed before the earlier exercise of determining the reliability of the questionnaire for the study. Computed Cronbach's alpha score was 81.5%, which indicated that the questionnaire was highly reliable (Table 1).

Independent variables in the study included interests of residents about vertical urban green spaces, educational methods and effectiveness of training classes by plant clinics. The dependent variable in this research study was the behavior of residents about success of plant clinics in changing their attitudes, skills and knowledge about vertical urban green spaces.

Stage three involved a survey held in winter of 2011. The research population included all residences in region 7, i.e., those who participated in the plant clinics classes about vertical urban green spaces, in the city of Tehran (N = 140).

For measurement of correlation between the independent variables and the dependent variable, correlation coefficients have been utilized and included a Pearson and Spearman test of independence.

RESULTS AND DISCUSSION

Table 2 summarizes the demographic profile and descriptive statistics. The results of descriptive statistics indicated that majority of respondents were female with a mean age of more than 45 years old. Less than half of respondents had earned a bachelor degree and more than 84 percent owned their place of residence.

Table 2: Personal Characteristics

Sex	Female (75%) Male (25%)
Age/year	Mean=45.64
Place of Birth	Tehran (75%) Others (25%)
Degree	Bachelor Degree (45%)
Main Occupation	Housewife (42.0%)
Type of Residence	Own (84.0%) Rental (16.0%)

The results of respondents' view about their interest about vertical green spaces show that more than 56 percent of the respondents (n=79) indicated that they are very much interested about green spaces and only one respondents stated that they are not interested about green spaces.

Table 2: Means of respondents' views about success of plant clinics in changing their attitudes, skills and knowledge about vertical urban green spaces (1=strongly disagree; 5=strongly agree)

Variables	Mean	SD
Knowledge about protecting green spaces	4.18	0.59
Attitudes about protecting green spaces	4.05	0.56
Skills about protecting green spaces	3.71	0.85

Table 2 shows the results of respondents' perception about success of plant clinics in changing their attitudes, skills and knowledge about vertical urban green spaces. The highest mean number refers to knowledge about protecting green spaces (mean=4.18) and the lowest mean number was skills about protecting green spaces (mean=3.71).

The results of respondents' view about the appropriateness of educational methods in protecting vertical urban green spaces in Tehran are presented in Table 3. The highest mean number refers to using lecture (mean=4.07) and the lowest mean number refers to using films (mean= 2.57).

Table 3: Means of respondents' views about appropriateness of educational methods in protecting vertical urban green spaces in Tehran (1=strongly disagree; 5=strongly agree).

Variables	Mean	SD
Lecture	4.07	0.92
Workshop	3.86	0.89
Discussion	3.80	0.74
Practical Training	3.77	1.20
Visit to Exhibition	3.75	1.22
Printed material	3.07	0.83
Film	2.57	0.96

The respondents' perception about the effectiveness of training classes in protecting green spaces is presented in Table 4. As can be seen from this table, the highest mean refers to friendly relationship between educators and participants (mean=4.44) and lowest mean refers to matching the content of classes with the needs of residence (mean=3.24).

Table 4: Means of respondents' views about the effectiveness of training classes in protecting green spaces (1=strongly disagree; 5=strongly agree).

Variables	Mean	SD
Friendly relationship between educators and students	4.44	0.71
Ability of educators	4.17	0.69
Adaptation of educational contents with title of courses	3.87	0.66
Clarity of training classes objectives for residence	3.77	0.82
Matching the contents of classes with the needs of residence	3.24	0.87

Pearson and Spearman coefficient was employed for measurement of relationships between the perception of respondents about role of plant clinics in changing attitudes and increasing knowledge and skills about vertical green spaces as dependent variable and independent variables. Table 5 displays the results which show that there was relationship between dependent variable and interested about vertical green spaces, practical training, attending workshops, discussion, ability of educators, adaptation of educational contents with title of courses and clarity of training course's objectives for residence as independent variables.

Table 6 shows the result for regression analysis by stepwise method. Independent variables that were significantly related to perception of respondents about role of plant clinics in changing attitudes and increasing knowledge and skills about vertical green spaces as dependent variable were entered. The result indicates that 30% of the variance in the perception of respondents could be explained by clarity of training course's objectives (Beta coefficient: 0.250, sig.: 0.002), adaptation of educational contents with title courses (Beta coefficient: 0.247, sig.: 0.002), discussion (Beta coefficient: 0.209, sig.: 0.004) and their interest about vertical green spaces (Beta coefficient: 0.180, sig.: 0.017). Other variables were not statistically significant

_____

Table 5: Correlation measures between independent variables and dependent variable

Independent variables	Dependent variable	R	p
interested about vertical green spaces	role of plant clinics in changing attitudes and increasing knowledge and skills	0.321**	0.000
practical training	role of plant clinics in changing attitudes and increasing knowledge and skills	0.287**	0.001
attending workshops	role of plant clinics in changing attitudes and increasing knowledge and skills	0.180*	0.033
Discussion	role of plant clinics in changing attitudes and increasing knowledge and skills	0.298**	0.000
ability of educators	role of plant clinics in changing attitudes and increasing knowledge and skills	0.429**	0.000
adaptation of educational contents with title of courses	role of plant clinics in changing attitudes and increasing knowledge and skills	0.467**	0.000
Clarity of training classes objectives	role of plant clinics in changing attitudes and increasing knowledge and skills	0.484**	0.000

**p<0.01, *p<0.05

Table 8: Multivariate Regression Analysis

	B	Beta	T	Sig.
Constant	7.982	--------	6.512	0.000
Clarity of training course's objectives	0.487	0.250	3.092	0.002
Adaptation of educational contents with title courses	0.460	0.247	3.116	0.002
Discussion	0.453	0.209	2.921	0.004
Their interest about vertical green spaces	0.140	0.180	2.421	0.017

$R^2=.0.30$

CONCLUSION

As the results of the study showed, variables, interested about vertical green spaces, discussion, adaptation of educational contents with title of courses and clarity of training course's objectives for residence caused 30% of variance on the perception of respondents about role of plant clinics in changing attitudes and increasing knowledge and skills about vertical green spaces as dependent variable. This result is consistent with Esmaeeli (2007), Hosseini and Laing (2011) and Hosseini (2010).[4, 8, 10]

The majority of respondents in this study indicated that lecture was their preferred methods of training in the plant clinics. The Nabavi Salem (2004)[11] observed that the preferred method to disseminate the knowledge was lecture.

The results show that more than half of respondents were interested about the vertical urban green spaces. The results are in accordance with findings of a study of participants in the plant clinic training courses in Tehran (Esmaeeli, 2007) [10].

To achieve sustainable urban development, cities need to be managed to achieve a balance between meeting the needs of human beings and protecting the natural environment. This can be done by managing resources carefully and ensuring their availability for the next generations. In order to protect and enhance environmental conditions for future generations, it is essential to provide the sustainability of urban ecosystems (Dizdaroglu et al., 2010).[12]

_____

REFERENCES

[1]. BL Ong. Landscape and Urban Planning, **2003**, 63, 197-211.

[2]. K Swanson. Tips for using vertical space in your garden, **2006**.
Available at: http://www.ecohouseplan.com/

[3] C Konijnendijk; M Gauthier; R Van Veenhuizen. *Urban Agriculture Magazine*, **2004**, 13, 1-5.

[4] SJ Hosseini; R Laing. *International Journal of Sustainable Development and World Ecology*, **2011**, 2, 128-133.

[5] S Rahmani. Role of Plant Clinics in Improving Green Spaces and Promoting Participation, Tehran Parks and Green Space Organization Publication, **2001**.

[6]. UN-Habitat. Sustainable development of Tehran City Green Space and Providing Improved Condition for Citizens, Best Practices Database, **2008**.

[7] E Kirby. Progressive Planning Magazine, summer, **2009**.

[8] SJ Hosseini. *The International Journal of Environmental, Cultural, Economic and Social Sustainability,* 6, 111-121, **2010**.

[9]. S Sarvari. Master Thesis, Science and Research Branch (Tehran, Iran, **2006**).

[10] S Esameeli. Master Thesis, Science and Research Branch (Tehran, Iran, **2007**).

[11] H Nabawi Salem. *Egyptian Journal of Agricultural Research*, **2004**, .4, 1973-1996.

[12]. D Dizdaroglu; T Yigitcanlar; L Dawes. Planning for Sustainable Urban Futures: An Ecological Approach to Sustainable Urban Development, IGI Global, **2010**.