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A STUDY ON THE VERTICAL GARDEN AMONG RESIDENCE AND COMMERCIAL SECTOR IN CHENNAI CITY

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ABSTRACT

Vertical gardening is a new concept, with beauty and architecture of green walls . Vertical gardening is a great way to maximize the use of land, to grow a garden in very tight areas or maintain a garden **(Greene, 2014).** The main objective of the study is to determine the aesthetic and visual appearance of the vertical garden and estimate the difference between benefits of vertical garden based on type of building. For the present study, a univariate research design was used with wall supporting structures as independent variable and vertical garden as dependent variable. Purposive sampling method with interview schedule was adopted. Benefits obtained from vertical garden are decorative, conserves space and purifies air can be achieved with less maintenance and requirements that is needed. Hence, I conclude that vertical garden is aesthetically appealing and ecologically efficient.

INTRODUCTION

Vertical gardening is the process of gardening that is done vertically or upward. It aims to plant crops in a vertical position or standing position. This can either be done through hanging pots or with frameworks as long as plants are not planted on the ground like traditional gardening (Tripp, 2013). A vertical surface, such as fences and walls, has an important role to play in the garden. Plants that twine or cling will soon hide an unsightly surface, but some plants like wisteria and Virginia creeper are vigorous growers and require a lot of wall space (Anne et.al, 2005). Vertical gardens always uses wall as a support. The green wall is going to have a number of necessary growing mediums like soil, which are placed on the walls face. So the containers are either hanging at intervals off the green wall, depending on the weather green wall is done inside or outside of the house (Singh, 2016).The study was conducted to determine the aesthetic appearance of the vertical garden.

OBJECTIVE:

1. To determine the aesthetic and visual appearance of the vertical garden.
2. To estimate the difference between benefits of vertical garden based on type of building.

HYPOTHESES:

1. There would be significant relationship between the preference places of vertical garden based on type of building.
2. Significant relationship would exist between benefits of vertical garden based on type of building.

METHODOLOGY

For the present study, a univariate research design was used with wall supporting structures as independent variable and vertical garden as dependent variable. To determine the main problem thereby testing the formulated hypotheses, ex-post facto design was followed. Ex-post facto research is conducted with regard to events or influences in a phenomenon which is occurred (Krishnaswamy et.al. 2006). For the present study, purposive random sampling method was adopted. The sample was selected from diverse regions in Chennai city. The sample size was 80, comprising of equal number of 40 Residence and 40 Commercial places were chosen for the study. The main tool used for the present study was interview schedule method. The main study was conducted with forty residence and forty commercial respondents using the prepared interview schedule.The data collected from the respondents were edited, coded, classified, tabulated and analyzed statistically by employing parametric statistical tests namely, Anova.The researcher attempted to collect qualitative data using case study.Among the samples selected for the study on the vertical garden among residence and commercial sector, five commercial places installed with vertical garden were identified as 'typical cases', from the information gathered through the observation method.An intervention program was conducted amongyoungsters to create awareness about vertical garden. The awareness program has covered gardening, concept of vertical garden, types of vertical garden, its benefits, installation process and selection of plants, care and maintenance such as watering, temperature, soil, fertilizers and light by the investigator.

RESULTS AND DISCUSSION

Supporting Structure of Vertical Garden:

Various supporting structure of vertical garden in residence and commercial places are presented below in the Table-1 and Figure-1

Table - 1 Supporting Structure of Vertical Garden

Supporting Structure of Vertical Garden	Residence N = 40		Commercial N = 40		Total	
	N	%	N	%	N	%
Wall	35	87.5	29	72.5	64	80.0
Grills	8	20.0	18	45.0	26	32.5
Trellis	12	30.0	14	35.0	26	32.5
Fence	0	0	4	10.0	4	5.0
Pillars	2	5.0	5	12.5	7	8.8

Visual vertical garden can be creative by mounting plants on wall. Among the residence 87.5 percent respondents and 72.5 percent from commercial area uses their wall as supporting structure for vertical garden and 45 percent of the respondents among commercial sector uses grills as supporting structure of the vertical garden and 30 percent from residence preferred trellis.Very few of about 5 and 12.5 percent respondents from residence and commercial selected pillars as their supporting structure of vertical garden because many building in recent constructions don't have pillars.

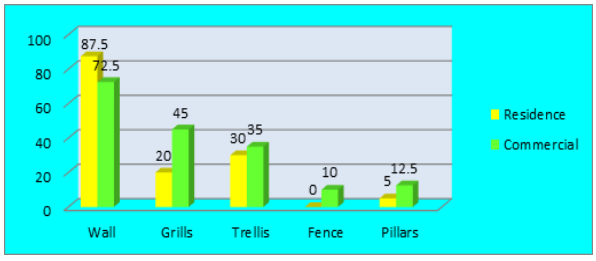

Figure: 1 Supporting Structure of Vertical Garden Summary of ANNOVA Depicting Preference Place For Vertical Garden Based on Type of Building:

Table 2 shows the comparison between groups and within groups tested by one way analysis of variance were seen in preference place of vertical garden within commercial and residence area.

Table - 2 Summary of ANOVA depicting preference place for vertical garden

Preference Place for Vertical Garden		Sum of squares	df	Mean square	F Value
Entrance	Between groups	1.800	1	1.800	8.283*
	Within groups	16.950	78	.217	
	Total	18.750	79		
Main gate	Between groups	1.800	1	1.800	11.556**
	Within groups	12.150	78	.156	
	Total	13.950	79		
Balcony	Between groups	3.200	1	3.200	15.600**
	Within groups	16.000	78	.205	
	Total	19.200	79		
Verandah	Between groups	.200	1	.200	2.916 NS
	Within groups	5.350	78	.069	
	Total	5.550	79		
Patio	Between groups	.013	1	.013	.339NS
	Within groups	2.875	78	.037	
	Total	2.888	79		

NS- Not significant ** Denotes 1 percent Significant Level

Table 2 revealed a significant difference between the residence and commercial area at main gate and balcony at 1 percent level and the entrance showed a significant difference at 5 percent level. No significant differences were noted in the preference place such as verandah and patio of vertical garden. There is no much garden space just a concrete patio or a balcony is enough to do a vertical garden. This shows that for aesthetic purpose for guest, customers and for others the outlook appearance is good in the main gate and balcony. Hence hypothesis 1 was partially accepted.

Summary of ANNOVA Depicting the Benefits of Vertical Garden Based on Type of Building:

Table 3 shows the comparison between groups and within groups tested by one way analysis of variance based on type of building were seen in benefits of vertical garden within commercial and residence area.

Table– 3 Summary of ANOVA depicting the Benefits of Vertical Garden based on Type of Building

Benefits of vertical garden		Sum of squares	df	Mean square	F Value
Functional	Between groups	.800	1	.800	5.805**
	Within groups	10.750	78	.138	
	Total	11.550	79		
Decorative	Between groups	.000	1	.000	_
	Within groups	.000	78	.000	
	Total	.000	79		
Reduces global warming	Between groups	.612	1	.612	3.212 NS
	Within groups	14.875	78	.191	
	Total	15.488	79		
Conserves space	Between groups	1.513	1	1.513	6.386**
	Within groups	18.475	78	.237	
	Total	19.988	79		
Purifies air	Between groups	.050	1	.050	.200 NS
	Within groups	19.500	78	.250	
	Total	19.550	79		
Conserves space	Between groups	.112	1	.112	1.114 NS
	Within groups	7.875	78	.101	
	Total	7.988	79		
Flexible	Between groups	.200	1	.200	4.333*
	Within groups	3.600	78	.046	
	Total	3.800	79		
Less maintenance	Between groups	.800	1	.800	3.476 NS
	Within groups	17.950	78	.230	
	Total	18.750	79		

NS- Not Significant * - Significant at 5 percent level **- Significant at 1 percent level

Table 3 shows that there was 1 percent significant level on the benefits like functional and space conservation, 5 percent significant level is observed from flexible benefit of vertical garden. No significant level is observed which reduces global warming, purifies air, conserves water and less maintenance benefits of vertical garden. Unanimously both the respondents from the residence and commercial were benefitted with their decorative aspect. Hence hypothesis 2 was partially accepted.

CASE STUDY

This vertical garden is installed in a commercial building located in Mylapore, Chennai.This vertical garden is installed at a part of a wall were people tend to view at it when they enter the building. This vertical garden is named as pallet vertical garden were the pallet is fixed to the wall.The supporting structure used for this vertical garden is wall garden panels.This vertical garden is maintained by regular watering, but the plants die at intervals due to improper conditions. The benefit obtained from this vertical garden is that it adds visual drama to the entrance of the building. This vertical garden is installed using Green Duranta plant, Reep red plant and Rhoeo variegated plant.

Intervention program awareness on vertical garden

An intervention program was conducted to Adolescents to give awareness about vertical garden. The awareness program has covered namely on gardening, concept of vertical garden, types of vertical garden, it's benefits, installation process, selection of plants, care and maintenance such as watering, temperature, soil, fertilizers and light by the investigator. The awareness program is given through power point presentation.

PLATE -1 Vertical plants on Window Grill

To showcase the decorative aspect of vertical garden small space has been utilized by vertical garden in college campus. The plants pictures garden has been given in plate-1.Vertical garden might need more maintenance than garden or container plant. These living walls are more compact and therefore have less soil, so they may need to be watered more often. Watering can be tricky and the bigger living wall is recommended to incorporate drip irrigation. A green wall will help to vastly improve the quality of air in any environment. It acts as a natural air filter, purify the polluted air whilst release clean oxygen. If installed in an office environment, the presence of green walls can lead to greater employee productivity and overall health make employees to be in a cleaner air which leads to have better concentration and health.Living walls or green walls are self sufficient vertical gardens that are attached to the exterior or interior of a building. The plants receive water and nutrients from vertical support instead of the ground.Plants on the Vertical Gardens like herbs make environment as beautiful and healthier.

CONCLUSION

From this study it could be concluded that not only aesthetic appeal is achieved through installing vertical garden over walls, trellis and grills but also the use of herbal plants, ornamental plants and flowering plants brings more benefits to both residence and commercial sector. It is decorative and adds visual appearance to the place where it is installed. Moreover benefits obtained from vertical garden are decorative, conserves space and purifies air can be achieved with less maintenance and requirements that is all needed for this vertical garden. Hence, I conclude that vertical garden is aesthetically appealing and ecologically efficient.

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