

Study of Commercial Business Men and Employers' Recognition on the Existence Effect of the Roadside Trees

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This study is carried out for obtaining the basic materials for presentation of creation and desirable management of urban roadside trees through analyse the existence effect of trees on people who operate th commercial areas along the streets. Roadside tree and green areas are recognized comfort space in addition to simple planting area. Therefore various trees and flowering plants should be introduced in addition to roadside facilities for convenience. Planted roadside trees should be maintained. We will propose an method that residents plant and manage the trees and flowering plants on the two lane of one way road. However main lines more than four lane of one way have more public property beside the residents space. Therefore these should be maintained mainly by related government agencies.

Key Words : Consciousness of planting, Commercial zone, Green space, Street trees

1. Introduction

Comfortable environment for man is built up through mutual relationship with surrounding environs. It is very important to analyse human psychological behavior on urban green area, because it provides objective materials for measuring.

A city is an artificial living space originally formed by mankind out of natural regions into something suitable for habitation. Therefore, by changing the natural environment, cities compromise mankind's own existence and health as biological organisms. Various environmental improvement activities done in cities are primarily conducted to supplement the natural functions that were lost with urbanization. That is, the supplementation of lost functions indicates the results as various existential effects.

Takahashi (1972)¹⁾ insisted that the various functions and effects of urban greenery include the original effects or the usable effects, and evidential effects or the existential effects, while Tadaki (1982)²⁾ insisted that the ecological activities of forests are re-

lated to environmental preservation, then presented an illustration showing such related effects. Maruta (1983)³⁾ classified the functions of greenery in parks into six categories according to the relationships between men and plants, and between plants and natural elements. Also, Takahara (1988)⁴⁾ emphasized the various functions and effects of the greenery in urban parks by classifying the functions of park greenery into three objectives: objective functions (physical and mechanical), and subjective functions (aesthetics and amenities) of the greenery, legislation and execution of plans, and response to the urban proximity.

Traditional studies on recreational undertakings focused on the functions and existential effects of the greenery in urban parks, but recent theories on ecological cities have been focusing on sociopsychological aspects such as various functions and effects of the greenery in parks.

The studies on the sociopsychological aspects reveal that the behaviors and consciousness of mankind exist by the relationship between men and natural environments. Environmental psychology, developed by Lewin et al, influenced the results of the analytical techniques using psychological scales⁵⁾ to develop related studies. In landscaping, studies on the preserva-

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tion of skylines for urbanization and the influence and effect of park greenery have been focused in relation to landscape photographs, CG techniques, and human psychology based on the concept of environmental psychology for the landscape design purposed for landscape estimation.⁶⁻¹¹⁾

However, studies¹¹⁾ related to planting trees along urban streets make use of the management principles concerning tree-lined streets¹²⁾, planting and growth of such trees¹³⁻¹⁵⁾ and environmental measures focusing on problems, and improvement measures related to the planting and cultivation environment of such trees. Moon¹⁶⁾ and Jung¹⁷⁾, analyze the relationship between the visual traits and preference of trees on urban streets using simulated photographs, while Sung et al¹⁸⁾ report the results of a study on the effect of street tree landscape improvement based on the presence of greenery in the landscape photographs to be analyzed.

Systematic study about existence effect of urban green area realized by city dwellers or workers are

needed. An important objective of the study about existence effect of urban green area is roadside trees. Roadside trees among green area are created with road, frame of city. They affect significantly on pedestrians, buildings or facilities alongside road and people. They always experienced the effect and various values of roadside trees. Therefore development of comfortable roadside spaces are affected significantly from the relationship between human and environment. It is very important to understand the consciousness of people living alongside the road for creation of comfortable roadside space.

2. Methods for study and analysis

Seven different types of roadsides were selected for this study. The selection was made by some criteria such as one or two lane road of back side one way road, four or more than five lane road of main traffic line, and presence of green area on median strip. Sycamore(*Platanus occidentalis* L.), the most frequently planted tree in Daegu city, was selected as

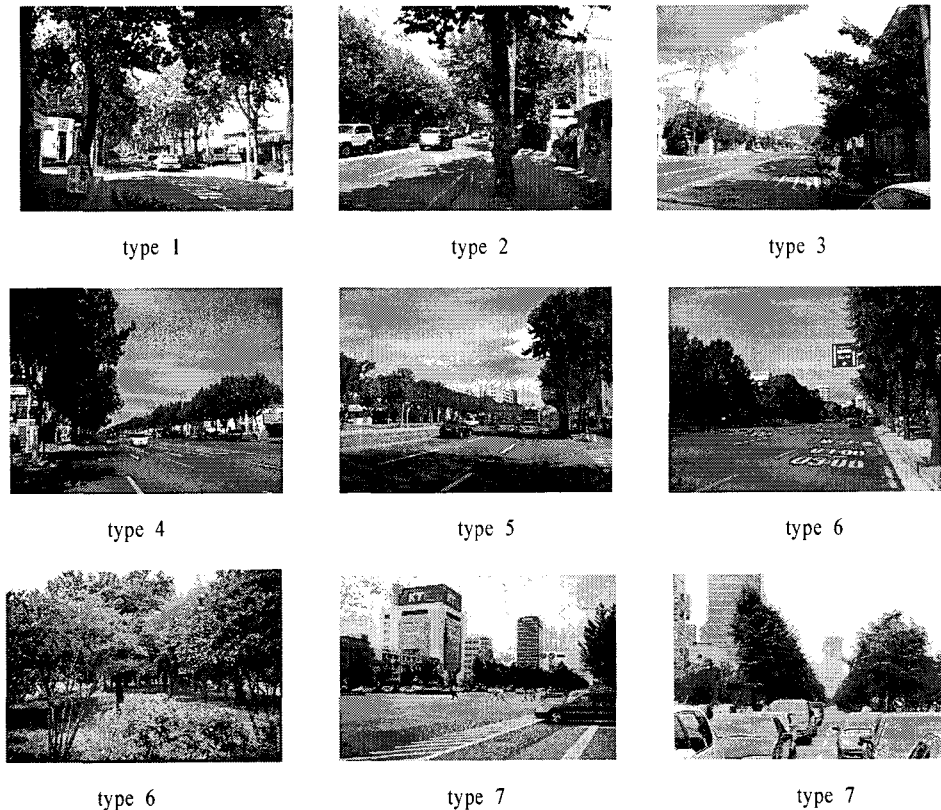


Fig. 1. Pictures of survey sites in Daegu city.

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main tree species for survey road.

Survey of direct interview was carried out by 3 surveyors during day time in July for workers of stores and offices on the objective roads. Selected interviewees have more than three years career.

Likert scale(1~5) was used for analysis of consciousness on existence effect. Analysis of variance was used for comparison of the objective sites and average was used for understand the trend of the objective sites. Ratio of selection was used to analyse the maintenance desirable items. Statistical analysis was carried out with SPSS program.

3. Result and discussion

Composition ratio of interviewees was 52.6% male and 47.4% female while that of age groups was: teen (9.9%), twenties (32.2%), thirties (3.9%), forties (17.0%), fifties (5.3%) and sixties (1.8%). Evaluation on wind strength, air purification, and noise reduction

by roadside trees showed significant statistical difference. The other items, however, did not show such significant difference.

Evaluation on "decrease of wind strength" showed highest value of 3.30 in Type 6 followed by 3.21 in Type 4. The evaluation values of all other types consistently range from 2.63 to 2.90 to reveal that the roadside trees were somewhat effective in decreasing wind strength.

Evaluation on "air purification" showed highest value of 3.39 in Type 6 followed by about 3.3 in Types 1, 5 and 4. The evaluation values of all other types were from 2.80 to 2.95 to reveal that the roadside trees were somewhat effective in purifying air.

Evaluation on "noise reduction" was highest at 3.26 in Type 6 and lowest at 2.33 in Type 2. Evaluation on "traffic lane scale" did not show any trend, but "green area on the median strip" was highly favored. It appears then that the interviewees believe that the

Table 1. Planting condition of survey sites

Type	type1	type2	type3	type4	type5	type6	type7		
Lane Type (one way)	one lane	two lanes	two lanes	four lanes	five lanes	five lanes	seven lanes		
TG*	ST	ST	ST	ST	ST+SP	ST+SP	ST+SP (3 lanes)		
WP	3m	2m	3m	4m	5m	5m	8m		
T S T	TA	DS	<i>Platanus occidentalis</i> L.	<i>Platanus occidentalis</i> L.	<i>Zelcova serrata</i> M.	<i>Platanus occidentalis</i> L.	<i>Platanus occidentalis</i> L.	<i>Cedrus deodara</i> (Rox.) Loudon	
		H	11±1m	11±1m	7±1m	11±1m	11±1m	13±1m	
		BH	3m	3m	2m	3m	3m	3m	4m
		WSP	6m	6m	6m	6m	6m	6m	8m
	FT	UF	UF	UF	UF	UF	MF	UF	
	W	-	-	-	-	2m	8m	3m	
G M S	TA	DS	-	-	-	<i>Zelcova serrata</i> M	<i>Zelcova serrata</i> M, <i>Ligustrum japonicum</i> Thunb, <i>Ginkgo biloba</i> L., <i>Prunus yedoensis</i> Mstsumura, <i>Cedrus deodara</i> (Rox.) Loudon, <i>Liriodendron tulipifera</i> L.	<i>Cedrus deodara</i> (Rox.) Loudon	
		H	-	-	-	-	7±1m	11~7m	13±1m
	S	DS	-	-	-	-	-	<i>Euonymus japonica</i> Thunb, <i>Rhododendron schlippenbachii</i> Max, <i>Lagerstroemia indica</i> L., <i>Ligustrum japonicum</i> Thunb., <i>Koelreuteria paniculata</i> Laxm, <i>Acer buergerianum</i> Miq, <i>Acer palmatum</i> Thunb.	-
		CD	-	-	-	-	-	3	-
	H	-	-	-	-	-	less than 7m	-	

* TG: Type of green space, ST: Street tree, SP: Screen plantation of median transteifen, WP: Width of pedestrain space, TST: Types of street trees, GMS: Green Median Stripe, TA: Tree arbor, S: Shrub, DS: Dominant species, H: Hight, W: Width of Green Median Stripe, BH: Branching hight, FT: Forst type, CD: Cover degree, UF: Unifom forest, MF: Mixed forest

creation of a green median strip may contribute to the comfort of people living alongside the road.

When the residents in the roadsides were surveyed about the maintenance of surrounding roadside trees/green areas, they expressed the highest demand for overall recreational facilities. This was followed by demands for trash cans, lighting, parking lots, and

restrooms. Their demands for pest control, cleaning, and development of natural forest were also relatively high. These various demands reflect the interviewees' views that having a green area entails more than just planting trees, but requires careful maintenance. In relation to the number of lanes of roads, the interviewees said that the roads with one and two

Table 2. Existence effect on the street trees

item	type							F-value
	1	2	3	4	5	6	7	
feel coolnes	3.53abc	3.67ab	3.48abc	3.79c	3.59bc	3.57bc	3.18a	1.99
feel warmth	2.37a	2.57a	2.65a	2.93a	2.70a	2.83a	2.63a	0.89
dew	3.21ab	3.40ab	3.39ab	3.50ab	3.55b	3.56b	3.12a	1.57
Wind control	2.63a	2.90a	2.70a	3.21c	2.80ab	3.30b	2.65a	2.41*
humidity control	2.84a	2.72a	2.74a	3.07a	2.95a	3.17a	2.88a	0.99
purify of air pollutant	3.32b	2.80a	2.95ab	3.29ab	3.30ab	3.39b	2.94ab	2.52*
Noise diminutio	2.68a	2.33a	2.77ab	2.79ab	2.77ab	3.26b	2.63a	3.07**
provide the green shades	3.32a	3.28a	3.18a	3.57a	3.52a	3.57a	3.18a	1.47
feel change of season	3.26ab	3.33ab	3.30ab	3.57b	3.48ab	3.48ab	3.00a	1.31
ecological space	2.63a	2.63a	2.73a	3.00a	3.02a	2.82a	1.00a	0.96
agreeable work environment	3.11abc	3.07ab	2.96a	3.50bc	3.23abc	3.57c	3.12abc	20.4
Creation of good city atmosphere	3.11a	3.13a	3.23a	3.57a	3.30a	3.57a	3.24a	1.37
City beautificatio	3.16ab	3.45ab	3.43ab	3.43ab	3.48ab	3.61b	3.06a	1.58

a, b, c : Duncan Grouping * P<0.05, ** P<0.01

Table 3. Desire of roadside Planting(Several response)

(unit : %)

item	type						
	1	2	3	4	5	6	7
Rest facilities	12.00	16.67	11.58	10.00	11.48	8.62	9.62
Lighting facilities	10.67	8.33	7.37	11.67	6.70	7.76	7.69
parking space	5.33	4.63	6.32	11.67	6.70	10.34	9.62
bathroom	4.00	6.48	7.37	8.33	6.70	8.62	10.58
drinking fountain	4.00	4.63	9.47	5.00	7.18	5.17	5.77
wastebasket	8.00	10.19	10.53	10.00	8.13	9.48	9.62
planting of tree	4.00	5.56	4.21	3.33	4.78	4.31	4.81
planting of flowering plants	5.33	7.41	6.32	1.67	3.83	6.03	7.69
maintenance of Plants	6.67	6.48	4.21	3.33	5.26	3.45	5.77
Insect disinfection	10.67	2.78	3.16	6.67	8.61	10.34	2.88
cleaning	8.00	3.70	7.37	5.00	6.70	9.48	3.85
planting of various tree species	5.33	5.56	6.32	8.33	4.78	4.31	4.81
Forest furtherance of natural condition	5.33	8.33	5.26	5.00	6.70	4.31	6.73
Etc..	10.67	9.25	10.51	10.0	2.45	7.78	10.56
Sum	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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lanes one-way required recreational facilities, lighting, trash cans, and the cultivation and management of trees, flowering plants, and other plant varieties. The residents generally regarded the roadside trees as useful, and specified their preference for practical varieties of plants.

The major roads with more than four lanes one-way demand lighting, entertainment facilities, parking lots, restrooms, trees and flowering plants, application of insecticides, cleaning, and development of natural forest. In particular, roadside facilities such as parking lots and restrooms were common requirements in various numbers of lanes. The major roads with green median strips required management attention, such as more trees, pest control, and regular cleaning.

4. Conclusion

The results of this study are followed. Roadside tree and green areas are recognized comfort space in addition to simple planting area. Therefore various trees and flowering plants should be introduced in addition to roadside facilities for convenience. Planted roadside trees should be maintained. We will propose an method that residents plant and manage the trees and flowering plants on the two lane of one way road. However main lines more than four lane of one way have more public property beside the residents space. Therefore these should be maintained mainly by related government agencies.

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