

Study on Landscape Planting at the Site of the Enterprising Office based on the Land Use Characteristics

Yasuhiko SHIMOMURA, Noboru MASUDA, Isao NAKASE, and Daishu ABE

Laboratory of Urban Landscape Design, College of Agriculture

(Received October 31, 1988)

Abstract

The aim of this study is to make clear how landscape planting should be at the private spaces in the near future, by obtaining the knowledge regarding the intention and attitude to landscape planting, and the methods and spaces to plant at the site of the enterprising offices.

As a result, it is very important to plant at the private spaces. This study shows how landscape planting should be at the site of the enterprising offices based on the land use characteristics. In this study, first of all, the enterprising offices were divided into 3 types based on the difference of use districts. This study produced the following findings: 1) The lack of space at the enterprising office disturbed landscape planting. 2) It was more useful to go on with the plan concerning landscape planting at the district scale. 3) It was very useful to plant near the entrance or around the site of the enterprising office situated at the industrial land use, and to plant near the entrance, around the site, or on the veranda of the enterprising office situated at the commercial land use. The result of analyses on the space for landscape planting at the residential land use showed the tendency between the industrial land use and the commercial land use.

Introduction

Generally speaking, landscape planting makes the resident more comfortable in the city and makes the urban landscape better. But nowadays the problems arise how landscape planting should be increased and raised; especially landscape planting that the residents always contact with and see near them. In addition to the project of landscape planting at the parks and streets by a public government, it is important to plant at private spaces based on the participation and cooperation of city residents.

Based on "the Outlines of Promoting the Countermeasure to Landscape Planting in the City"¹⁾ that was established for the purpose of completing the environment of the city area, the project of promoting landscape planting in the city is being carried out. In "An Interim Report as to the Plan in order to Promote the Synthetic Landscape Planting in the City"²⁾ by the Centre Council of City Planning that is an advisory body of the Minister of Construction, the necessity of landscape planting at the private spaces was shown, and the measure to prompt the participation or cooperation of residents was proposed. According to this, promoting a fund drive and establishing a foundation for landscape planting in the city were proposed as to maintain the source of revenue that could assist the activities of the residents with their participation and cooperation. Since then, some various measures have been taken in public; those were the guidance of agreement on the landscape planting, the direction of it at the time of development, the direction of it at the site of the factory, the distribution of a subsidy for it, and so on. In the near future, it will be more important to take more suitable measures based on the consciousness and intention of the residents or the enterprising offices. And those

measures must be considered under some different physical conditions of environments. Especially in the town area, it should be hurried to investigate how landscape planting is promoted at the site of the enterprising offices with a comparative large planting space³⁾.

Finally, with our sincere gratitude, we would like to make a special acknowledgement to the Section of Park at the Department of City Planning in Sakai City and the Foundation of the Park in Sakai.

1. Study Procedures

1.1 *Method of Study*

This study based on the hypothesis that is what the intention and attitude of the enterprising offices as to promoting landscape planting are related to the land use condition surrounding the each office. And so, to make clear the relationship between the characteristics of the environmental conditions at the site or surrounding site of the enterprising offices and the intention or attitude of it in relation to promoting landscape planting, the enterprising offices were divided into 3 types based on the difference of the use districts. Those were the type of the residential land use, one of the commercial land use, and one of the industrial land use. The purpose of landscape planting at the site of the enterprising office is made clear, and the space in the site is discussed that should be planted for landscape development.

(1) *Outline of Survey*

In order to make clear how landscape planting in an enterprising office should be, the sheets of questionnaires were sent to the enterprising offices situated in Sakai City on 1st of June in 1987, and received by 15th of June in 1987. Regarding sampling, from the Dictionary of Enterprising Offices in Sakai City⁴⁾, a manufacturing industry, a wholesale/retail business, a financial/insurance business, a real-estate business, a transportation/communication service, and a service industry were selected, based on the Classification of Japanese Standard Industry. As 100 enterprising offices were picked up for the samples at random from each group, the number of total of them was 600.

As a result, the number of valid responses obtained through such interviewing were: 33 from the group of a manufacturing industry, 20 from one of a wholesale/retail business, 36 from one of a financial/insurance business, 13 from one of a real-estate business, 28 from one of a transportation/communication service, and 32 from one of a service industry, for total of 162 responses.

(2) *Interviewing*

The contents of the questionnaires used in interviewing are concerned with the private background of each enterprising office, the intention or attitude to landscape planting, the issue at the time of planting for landscape, the purpose of landscape planting, the place for planting for landscape, and so on.

In question No. 1, each interviewee was asked to select the degrees of the feeling about promoting landscape planting in/around the site, by selecting a term which better fitted their feeling among three that were (1. feeling actively to increase the landscape

planting), <2. feeling to increase the landscape planting>, and <3. feeling not to increase>.

In question No. 2, each interviewee who answered <3. feeling not to increase> in question No. 1, was asked to select the feelings about the problems at the time of planting for landscape, by selecting the terms which better described their feelings among following these six contents: <1. having no money enough for landscape planting>, <2. having no space enough for landscape planting>, <3. having no time enough for landscape planting>, <4. having no idea enough for landscape planting>, <5. having no tools enough for landscape planting>, and <6. having no idea how to get trees, seeds, and saplings>.

In question No. 3, each interviewee was asked to select the feelings about an advantage to the own enterprising office by planting for landscape, by selecting the terms which better described their feelings among following these ten contents: <1. raising an image/reputation of your own manufactured/commodity goods>, <2. raising an image/reputation of your own enterprising office>, <3. raising an image/reputation of the district>, <4. raising an image/reputation of Sakai City>, <5. improving landscape better in the whole district>, <6. improving landscape better in Sakai City>, <7. increasing an amount of landscape greenery in the whole district>, <8. increasing an amount of landscape greenery in Sakai City>, <9. providing the space where the neighborhood can enjoy>, and <10. increasing the conversation or communication with the neighborhood as to the landscape greenery>.

In question No. 4, each interviewee was asked to select the feelings about the space to plant for landscape at the site of their enterprising office, by selecting the terms which better fitted the spaces among following these six contents: <1. on the wall (facade) of the building (enterprising office)>, <2. on the veranda/by the window of the building>, <3. near the entrance of the building>, <4. at the garden/open space in the site>, <5. around the site (a living hedge)>, and <6. on the roof of the building>.

1.2 *Method of analyses*

The sheets of questionnaires were divided into 3 groups, based on the difference of use districts. The type of residential area (58 samples) includes Low-rise Exclusive Residential, Exclusive Residential, and Mixed Residential District. The type of commercial area (58 samples) includes Neighborhood Commercial and Commercial District. The type of industrial area (54 samples) includes Semi Industrial, Industrial, and Exclusive Industrial District.

By analyzing the data collected from the responses to each question, at each type of use district, the necessity of landscape planting at the enterprising offices was made clear, and the aspect of its issues at time of planting for landscape. The data were then further analyzed by using the Dual Scaling Method, one of the method of Multivariate Analyses⁵⁾.

2. **Intention and Attitude to Landscape Planting of Enterprising Office**

2.1 *Intention and Attitude to Landscape Planting*

In this section, it was tried to clarify the extent of the intention and attitude to landscape planting of the enterprising office, by utilizing the responses to [question No. 1].

The Table 1 shows the intention and attitude to landscape planting at each type of

use districts (the residential land use, the commercial land use, and the industrial land use).

The results were as follows: on the whole, about 58% of the enterprising offices answered that they had the feeling to increase landscape planting. And about 11% of them answered that they had the feeling actively to increase landscape planting. As a total of both, about 70% of them felt the necessity to increase landscape planting. On the other hand, it became clear that there were about 80% of them situated in the commercial area that had the feeling of the necessity to increase landscape planting, about 70% of them in the industrial area, and about 60% of them in the residential area.

Guessing from the above fact, we recognize a little difference among the three types of land uses, and it can be understood that many enterprising offices situated at each type of land use comparatively have the latent intention and attitude to increase landscape planting in the near future.

Table 1 Necessity of Landscape Planting

Necessity of Landscape Planting	Residential Land Use	Commercial Land Use	Industrial Land Use	Total
1. Feeling Actively to Increase	4 8.33	6 10.53	8 15.09	18 11.39
2. Feeling to Increase	24 50.00	39 68.42	28 52.83	91 59.59
3. Feeling not to Increase	20 41.67	12 21.05	17 32.08	49 31.01
Total	48 100.00	57 100.00	53 100.00	158 100.00

[units] the upper : the number of interviewees (enterprising offices)
the lower : (%)

2.2 Issues on Landscape Planting

In this section, it was tried to clarify the issues on landscape planting, by utilizing the responses to [question No. 2] that were obtained from only the interviewee that answered (3. feeling not to increase) in [question No. 1]. The contents of the questionnaire are concerning the issues on a cost, space, time, knowledge, tools, and a material for landscape planting.

The Table 2 shows the issues on landscape planting at each type of land use based on the use district.

The result was as follows: on the whole, about 86% of the interviewees answered that a lack of space for landscape planting was the issue. And it became clear that about 92% of them situated at the commercial area had the feeling that they had no space enough for landscape planting, 85% of them at the residential area, and about 82% of them at the industrial area. On the other hand, just about 14% of them answered that they did not have money enough for landscape planting. Few interviewees answered concerning the knowledge, technique, and method for landscape planting.

In a word, more than 80% among 49 enterprising offices that did not feel the necessity to increase landscape planting asserted that the issue on landscape planting was, first of all, a lack of space for planting in their each site.

Based on the above result, it became clear that the enterprising offices had the rather

high intention concerning landscape planting. And it is surmised that the latent intention of them will become a vitality to promote and increase landscape planting at the private area, especially at an enterprising office. Therefore, at the enterprising offices that are not concerned with landscape planting, if the issue on a planting space is got rid of at present, it will be able to raise the intention and attitude on landscape planting.

Table 2 Issues on Landscape Planting

Issues on Landscape Planting	Residential Land Use	Commercial Land Use	Industrial Land Use	Total
The Number of interviewees that Answered <3. Feeling not to Increase> in the Q-No.1	20	12	17	49
1. Having no Money enough for Landscape Planting	3 15.00	2 16.67	2 11.76	7 14.29
2. Having no Space enough for Landscape Planting	17 85.00	11 91.67	14 82.35	42 85.71
3. Having no Time enough for Landscape Planting	3 15.00	0 0.00	0 0.00	3 6.12
4. Having no Idea enough for Landscape Planting	0 0.00	1 8.33	0 0.00	1 2.04
5. Having no Tools enough for Landscape Planting	0 0.00	1 8.33	0 0.00	1 2.04
6. Having no Idea how to get Trees, Seeds, and Saplings	0 0.00	0 0.00	0 0.00	0 0.00

[units] the upper : the number of the responses of interviewees (enterprising offices)
the lower : (%), * (permitting to choose whichever interviewees are fitted)

Table 3 Purpose and Advantage of Landscape Planting

Space for Landscape Planting	Residential Land Use	Commercial Land Use	Industrial Land Use	Total
The Number of Interviewees at Each Type of Land Use	50 —	58 —	54 —	162 —
1. Raising an Image of your Manufactured/Commodity Goods	2 4.00	4 6.90	1 1.85	7 4.32
2. Raising an Image of your Own Enterprising Office	23 46.00	24 41.38	26 48.15	73 45.06
3. Raising an Image of the District	7 14.00	19 32.76	20 37.04	46 28.40
4. Raising an Image of Sakai City	4 8.00	14 24.14	8 14.81	26 16.05
5. Improving Landscape better in the Whole District	12 24.00	24 41.38	22 40.74	58 35.80
6. Improving Landscape better in Sakai City	0 0.00	9 15.52	6 11.11	15 9.26
7. Increasing Landscape Planting in the District	12 24.00	8 13.79	14 25.93	34 20.99
8. Increasing Landscape Planting in Sakai City	3 6.00	8 13.79	4 7.41	15 9.26
9. Providing the Space where the Neighborhood can Enjoy	8 16.00	16 27.59	3 5.56	27 16.67
10. Increasing Conversation with Neighborhood	5 10.00	6 10.34	4 7.41	15 9.26

[units] the upper : the number of the responses of interviewees (enterprising offices)
the lower : (%), * (permitting to choose whichever interviewees are fitted)

3. Examination on Planning Level to Promote Landscape Planting

In this chapter, it was tried to clarify that the purpose and advantage of landscape planting at the enterprising offices, by utilizing the responses to [question No. 3]. And the planning level to take measures for promoting landscape planting at each land use was examined.

The contents of questionnaire were concerned with a planning level, an effect of publicity, an amount of landscape greenery, and service to residents. These are showed in the section 1.1 – (2) *Interviewing*.

The Table 3 shows the purpose and advantage of landscape planting at the enterprising offices at each type of land use based on the use district.

3.1 *Purpose and Advantage of Landscape Planting based on Land Use*

From this table 3, it can be seen, on a whole, that the responses concerning the purpose and advantage of landscape planting are (raising an image/reputation of your own enterprising office) (45.06%), in the order : (improving landscape better in the whole district) (35.80%), (raising an image/reputation of the district)(28.40%), and (increasing an amount of landscape greenery in the whole district) (20.99%).

On the other hand, viewing the purpose in terms of the type of land use, 46.00% of the enterprising offices situated at the type of residential land use answered that the purpose and advantage of landscape planting were (raising an image/reputation of your own enterprising office), in the order : (improving landscape better in the whole district) (24.00%), and finally (increasing an amount of landscape greenery in the whole district) (24.00%). At the commercial land use, the following responses to the questions were comparatively high : those were (raising an image/reputation of your own enterprising office) (41.38%), (improving landscape better in the whole district) (41.38%), and (raising an image/reputation of the district) (32.76%), (providing the space where the neighborhood can enjoy) (27.59%). Especially, the tendency could be seen that the terms concerning the level of Sakai City such as (raising an image/reputation of Sakai city) (24.14%), (improving landscape better in Sakai City) (15.52%), (increasing an amount of landscape greenery in Sakai City) (13.79%) at the commercial land use were comparatively higher than those at the other land uses. At the industrial land use, the following responses to the questions were comparatively higher: those were (raising an image/reputation of your own enterprising office) (48.15%), (improving landscape better in the whole district) (40.74%), and (raising an image/reputation of the district) (37.04%), and (increasing an amount of landscape greenery of the district) (25.93%). Especially, the tendency could be seen that the term concerning service to residents such as (providing the space where the neighborhood can enjoy) (13.79%) at the industrial land use, was comparatively higher than those at the other land uses.

The results were as follows: at whole enterprising offices, it became clear that though the response such as (raising an image/reputation of your own enterprising office) was taken as a matter of course, they were conscious of serving to the surrounding area by improving landscape better in the whole district, raising an image/reputation of the district, and increasing an amount of landscape greenery in the district. At the residential land use, the main purpose of landscape planting was also (raising an image/reputation of your own enterprising office). And it was surmised that they were conscious of serving to the surrounding area by (improving landscape better in the whole district), and (increas-

ing an amount of landscape greenery in the district). At the commercial land use, it became clear that they were comparatively conscious of serving at the level of Sakai City, surmised from the terms of (raising an image/reputation of Sakai City), (improving landscape better in Sakai City), and (increasing an amount of landscape greenery in Sakai City), as well as serving to the surrounding area and the neighborhood such as (improving landscape better in the whole district), (raising an image/reputation of the district), (increasing an amount of landscape greenery in the district), and (providing the space where the neighborhood can enjoy). Besides, it would be surmised that they had consciousness to get the residents to know how much they served and to have a good image, judging from the high ratio of response to (providing the space where the neighborhood can enjoy). Finally, it became clear that the tendency at the industrial land use resembled one at the commercial land use concerning the responses to the purpose of landscape planting, and that they had higher consciousness about improving landscape better in the whole district, raising an image/reputation of the district, and increasing an amount of landscape greenery in the district.

3.2 Examination on Planning Level to Promote Landscape Planting

In this section, as a next step, it was tried to clarify the planning level to promote landscape planting much more, by using the Dual Scaling Method. In this analysis, the data matrix consists of (the purpose and advantage of landscape planting) and (the type of land use) shown in the Table 3. Then, the variables of (the purpose and advantage of landscape planting) and those of (the type of land use) were located on a two-dimensional plane by using the optimum vector No. 1 and No. 2, which were obtained from the above analysis. Further, by using the Cluster Analysis Method, the terms on the purpose and advantage were classified at each type of land use. The Fig. 1 shows (the purpose and advantage of landscape planting) in terms of the type of land use. Besides, the coefficient of determination No. 1 was 58.99%, and that of No. 2 was 41.03%.

Based on this analysis, the following was made clear. By using the Dual Scaling Method and the Cluster Analysis Method, the items on the purpose and advantage were classified into four groups based on the type of land use. From the Fig. 1, it could be easily seen that the group which (the type of residential land use) belonged to, included (increasing the conversation or communication with the neighborhood as to landscape greenery), (raising an image/reputation of your own enterprising office), and (increasing an amount of landscape greenery in the whole district). The group which (the type of commercial land use) belonged to, included (improving landscape better in Sakai City), (raising an image/reputation of Sakai City), and (increasing an amount of landscape greenery in Sakai City), and the group which (the type of industrial land use) belonged to (raising an image/reputation of the district) and (improving landscape better in the whole district).

From these results of analysis, it became clear that the enterprising offices situated at the type of residential or industrial land use had the latent intention for landscape planting at the district planning level. And the enterprising offices situated at the type of commercial land use had the latent intention for landscape planting not only at the district planning level, but also at the city planning level. According this, it should be further considered whether landscape planting is suitable for a planning level when landscape planting will be tried to plan, to promote, or to take measures.

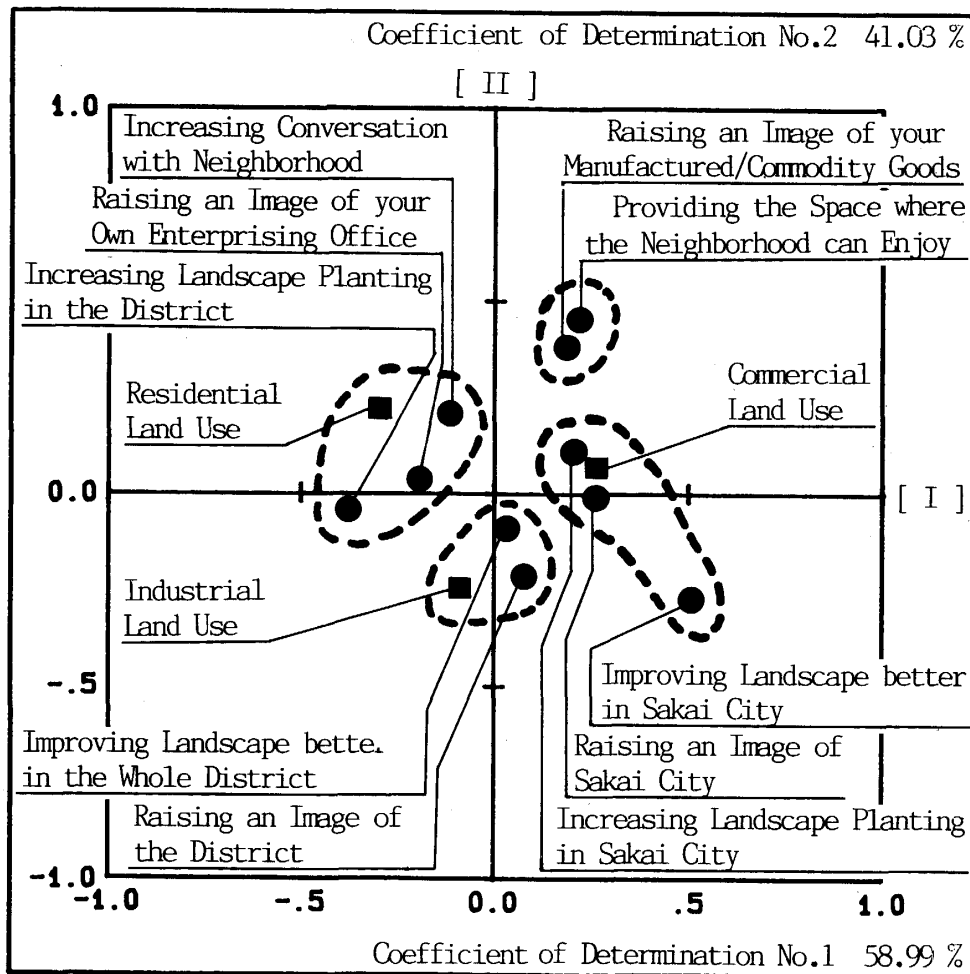


Fig. 1 Purpose and Advantage of Landscape Planting

4. Examination of Space for Landscape Planting

In this chapter, it is tried to clarify where planting for landscape, by utilizing the responses to [question No. 4] obtained from the interviewees that answered either <1. feeling actively to increase landscape planting> or <2. feeling to increase landscape planting> in [question No. 1].

The contents of the questionnaire are concerning the spaces for planting: <1. on the wall (facade) of the building (enterprising office)>, <2. on the veranda/by the window of the building>, <3. near the entrance of the building>, <4. at the garden/open space in the site>, <5. around the site (a living hedge)>, and <6. on the roof of the building>.

The Table 4 shows the space where they have the feeling to plant much more for landscape planting at the enterprising offices at each type of land use.

4.1 Space for Landscape Planting

The results were as follows: on the whole, 43.21% of interviewees answered that it

was necessary for them to plant (near the entrance of the building), in the order: (around the site (a living hedge)) (34.57%), (at the garden/an open space in the site) (31.48%), and (on the veranda/by the window of the building) (27.78%). But only under 15% of them answered that it was necessary for them to plant (on the roof of the building) and (on the wall (facade) of the building).

On the other hand, viewing the space for landscape planting in terms of the type of land use, more than 30% of enterprising offices situated at the residential land use answered that they had the feeling the necessity to plant (near the entrance of the building) and (at the garden/open space in the site), but only about 10% of them answered (on the roof of the building) and (on the wall (facade) of the building). The other characteristics at the type of residential land use was that the intention on the space, where it was necessary for them to increase landscape planting, was generally lower than at commercial or industrial land use. At the commercial land use, 48.28% of them answered that they wanted to plant for landscape (near the entrance of the building), in the order; (on the veranda/by the window of the building) (32.76%), and (around the site (a living hedge)) (32.76%). The other characteristics at the type of commercial land use was that the intention on the spaces such as (on the wall (facade) of the building) (18.97%) and (on the roof of the building) (17.24%), where it was necessary for them to increase landscape planting, were generally higher, but on the space such as (at the garden/open space in the site) (18.97%) was lower than at the commercial or industrial land use. At the industrial land use, it became clear that the intention on the spaces such as (near the entrance of the building) (46.30%), (around the site (a living hedge)) (46.30%), and (at the garden/open space in the site) (44.44%) was rather high, but the intention concerning (on the roof of the building) (5.56%) was rather low.

4.2 Examination on Space for Landscape Planting

The more the planning and taking measures are adapted to the intention on the spaces for landscape planting, the more they become useful for achieving the purpose at the early stage.

In this section, as a next step, it was tried to clarify where it should be planted for landscape much more, by using the Dual Scaling Method.

In this analysis, the data matrix consists of (spaces for landscape planting) and (the type of land use) shown in the Table 4. Then, the variables of (spaces for landscape planting) and those of (the type of land use) were located on a two-dimensional plane by using the optimum vector No. 1 and No. 2, which were obtained from the above analysis. Further, by using the Cluster Analysis Method, the terms on spaces for landscape planting were classified at each type of land use. The Fig. 2 shows (spaces for landscape planting) in terms of the type of land use. Besides, the coefficient of determination No. 1 was 88.36%, and that of No. 2 was 11.64%.

Based on this analysis, the following was made clear. By using both the Dual Scaling Method and the Cluster Analysis Method, the items on the spaces were classified into two groups based on the type of land use.

From the Fig. 1, it could be easily seen that the group named (A-group) which (the type of residential land use) and (the type of the industrial land use) belonged to, included (around the site (a living hedge)) and (at the garden/open space in the site). The group named (B-group) which (the type of commercial land use) belonged to, included (on the wall (facade) of the building), (on the veranda/by the window of the

Table 4 Space for Landscape Planting

Space for Landscape Planting	Residential Land Use	Commercial Land Use	Industrial Land Use	Total
The Number of Interviewees at Each Type of Land Use	50 —	58 —	54 —	162 —
1. On the Wall (Facade) of the Building	6 12.00	11 18.97	7 12.96	24 14.81
2. On the Veranda / by the Window of the Building	12 24.00	19 32.76	14 25.93	45 27.78
3. Near the Entrance of the Building	17 34.00	28 48.28	25 46.30	70 43.21
4. At the Garden / Open Space in the Site	16 32.00	11 18.97	24 44.44	51 31.48
5. Around the Site (a Living Hedge)	12 24.00	19 32.76	25 46.30	56 34.57
6. On the Roof of the Building	5 10.00	10 17.24	3 5.56	18 11.11

[units] the upper : the number of the responses of interviewees (enterprising offices)
the lower : (%), * (permitting to choose whichever interviewees are fitted)

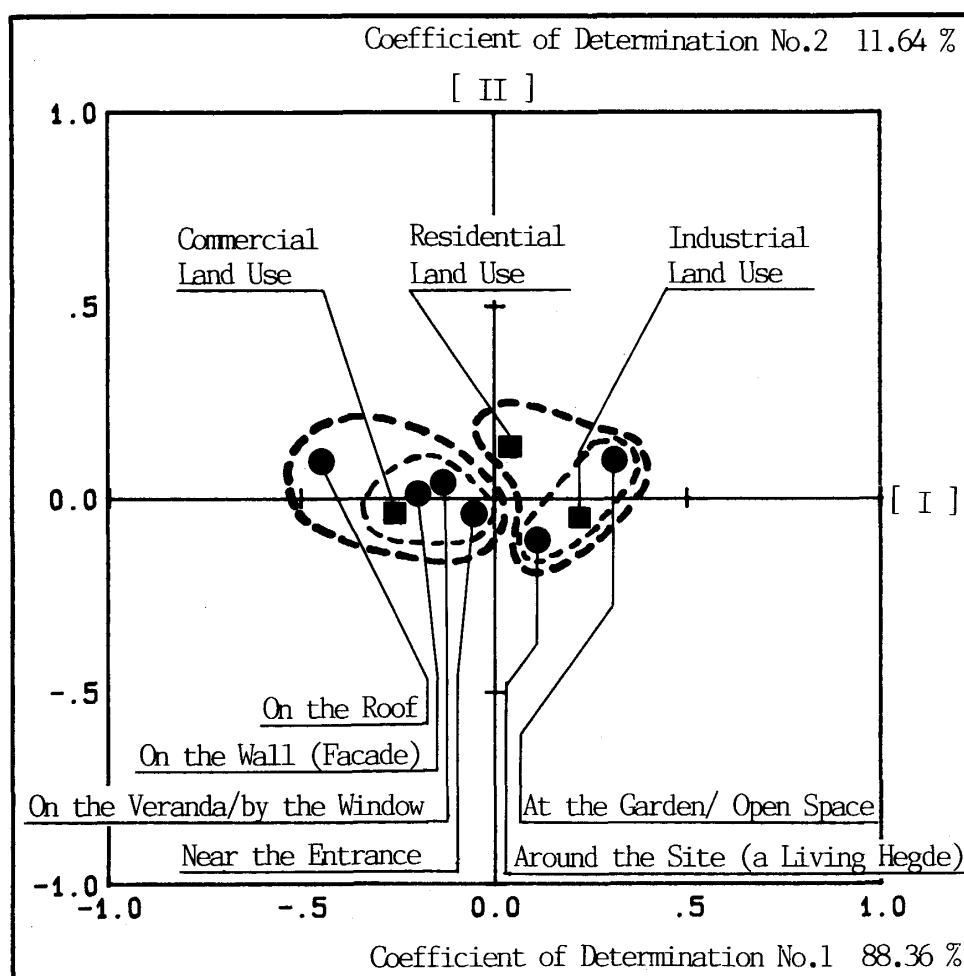


Fig. 2 Space for Landscape Planting

building), (near the entrance of the building), and (on the roof of the building).

When seeing the inclusive relationship among A-group, (the type of industrial land use) was located closer to (around the site (a living hedge)) and (at the garden/open space in the site) than (the type of the residential land use). Besides, though (the type of the residential land use) belonged to A-group, it was located close to B-group and was situated in the middle between (the type of industrial land use) and (the type of commercial land use). On the other hand, (the type of commercial land use) was located closest to (on the roof of the building).

After all, it became clear as followings. At the type of industrial land use, it was thought that (around the site (a living hedge)) and (at the garden/open space in the site) were needed in their sites. Therefore, it was effective to promote increasing landscape planting at such spaces. At the type of residential land use, it could be seen the same tendency as at the type of industrial land use. But in addition to these spaces, (on the veranda/by the window of the building) and (near the entrance of the building) were also needed to plant for landscape, though these spaces were included in the type of B-group. At the type of commercial land use, it was effective to promote increasing landscape greenery (on the veranda/by the window of the building) and (near the entrance of the building).

Conclusion

From the results obtained by this study, it became clear as follows:

1. It became clear that there were many enterprising offices having the latent intention concerning landscape planting at each type of land use.
2. The first issue on landscape planting at enterprising offices was concerning few planting spaces. Therefore, it was the most important measures to get rid of this issue. And it was necessary to take measures suitable for few planting spaces.
3. The purpose and attitude for landscape planting of enterprising offices at the type of industrial and residential land use were different from those at commercial land use. The former was at the district planning level and the latter was at the city planning level.
4. It was effective to promote and take measures to increase landscape planting (around the site (a living hedge)) or (at the garden/open space in the site) at the type of industrial land use, (on the veranda/by the window of the building) or (near the entrance of the building) at the type of commercial land use. On the other hand, the intermediate tendency at the type of residential land use was shown between at the type of industrial and the type of commercial land use. It was comparatively useful to promote increasing landscape planting (on the wall (facade) of the building) or (on the roof of the building).

Discussion

In this study, several aspects concerning landscape planting in terms of the type of land use were discussed, such as the intentions and attitudes, the issues, the purposes, and the spaces. And as the result of this study, a lot of useful and effective methods and measures to increase landscape planting could be found. In the near future, in order to

go on studying on landscape planting at the site of enterprising offices, it will be necessary to study further on landscape planting in consideration of the physical condition like a scale of the site and the social condition like a kind of business.

Reference

- 1) The 3rd Announcement about Greenery in the City by the Ministry of Construction (Notification by Permanent Vice-minister of Construction) (1976.6.9). *The Outline of Promoting the Countermeasure to Landscape Planting. (in Japanese)*
- 2) The Centre Council of City Planning (1982). *An Interim Report as to the Plan in order to Promote the Synthtic Landscape Greenery in the City. (in Japanese)*
- 3) The Association of Japanese Parks and Open Spaces (1985). *An Annual Report of Landscape Planting (1985). pp. 1 – 25. (in Japanese)*
- 4) Sakai City Municipal Office (1983). *The Dictionary of Enterprising Offices in Sakai City. (in Japanese)*
- 5) NISHIZATO, S. (1982). *Shitsuteki data no suryouka (The Dual Scaling Method). pp. 1 – 60. Asakura Shoten Co. (in Japanese)*