

Investigation on the Application of Spring Plants and Landscape Evaluation in Changsha Area

-- Take Liuyang River Wedding Cultural Park as an example

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Abstract: With the slogan of "Beautiful China" put forward by the 18th National Congress of the Communist Party of China, more and more people now choose to take wedding photos outdoors, hold weddings outdoors, and celebrate wedding anniversaries outdoors. In addition to having good quality photos, taking wedding photos outdoors requires In addition to the framing building, the plant landscape created by plants that matches the atmosphere of the wedding garden is also indispensable. However, most wedding gardens in China almost rely on architecture to create a theme atmosphere, while ignoring the role of the landscape created by plants in the theme of the entire wedding garden. This article takes Liuyang River Wedding Cultural Park in Changsha City as an example, analyzes the types and ecological characteristics of garden plants in Liuyang River Wedding Garden, and summarizes the experience in the growth, management and garden application of various garden plants. Then, on this basis, we analyze and summarize the existing problems in the application of garden plants in Liuyang River Wedding Cultural Garden, and point out corresponding measures and approaches to provide guidance for similar types of landscaping.

Keywords: Changsha Liuyang River Wedding Cultural Park, Plant landscape, Garden plants, Landscaping.

1. Introduction

1.1. Changsha City Overview

Changsha is the capital of Hunan Province in China. It is the political, economic, cultural, transportation, science and technology, financial and information center of the Hunan province. It is a famous historical and cultural city and a megacity in china.[1]

Changsha City is located in the northeast of Hunan Province, on the lower reaches of the Xiangjiang River. It is located in the transition zone between the hills of central Hunan and the alluvial plain of Dongting Lake. The terrain It is higher in the south and lower in the north, with red rocks, white sand, and hills and streams interlaced. The climate shows typical subtropical monsoon humid characteristics, with abundant rainfall and hot and rainy weather in the same season. The average annual temperature is 16.8-17.3°C, the extreme maximum temperature is 40.6°C, the minimum temperature is -12°C, the average annual rainfall is 1400mm, and the frost-free period is The average number of days is 275 days, and the average number of sunshine hours is 1677.1h.[2]

Changsha belongs to the Xiangjiang River system and has abundant water resources. In 2006, Changsha won the title of "National Forest City", and in 2008, Changsha was named "National Garden City".[3]

1.2. Overview of Changsha Spring Landscape Plants

Spring landscape plants mainly include ornamental flowers, leaves, branches, stems, and buds. After reviewing relevant literature and field surveys, it was found that plants with ornamental value in Changsha in spring mainly include flowers and leaves. The spring flowering plants in Changsha

are mainly plants that flower first and then leave leaves, and a small number of evergreen flowering plants. The spring leafy plants are mainly liquidambar, camphor, osmanthus, privet, etc. There are not many types, and some are monotonous.[4]

1.3. Investigation location introduction

Location overview: Liuyang River Wedding Park is located east of the East Second Ring Road in Changsha City and west of Liuyang River. It is about 8 kilometers away from Wuyi Square in the city center. It starts from Guihe Road in the south and ends at Yingpan East Road in the north, with a total length of about 6 kilometers. It is located at the intersection of Hehua Road and Liuyang River Avenue and covers an area of about 122 acres.[5]

The whole park is divided into five functional areas: Wedding Pedestrian Street, Wedding Ceremony Avenue, Church Wedding Area, Water Wedding Area, Lawn Wedding Area and Wedding Banquet Area.

③ Liuyang River Wedding Cultural Park is the first Hunan hotel integrating wedding, tourism, leisure, entertainment and other features to be carefully built by Junyuan Real Estate, a national real estate JT first-class qualification enterprise, and Changsha Furong Urban Construction Investment at a cost of 1.5 billion. One-stop leisure and entertainment complex. The theme design of the whole park is mainly Western style. In the project design, the marriage and love culture is continued to highlight the "love" movement, and the landscape node layout is used to adjust the rhythm of the landscape experience, providing a romantic and interesting ecological experience journey. In terms of planning structure: it emphasizes the axis relationship of the central church, uses a symmetrical layout to highlight the solemnity of the wedding ceremony, and reaches the riverside through the street corridor, tracing back

to the source to reach the climax of the experience. The application of landscape techniques: based on the British

natural landscape garden, open grassland, naturally planted trees and graceful paths.[6]

Table 1. List of plant species with common spring ornamental flowers in Changsha

Serial number	Species name	scientific name	Family name	plant type	Application area
1	magnolia	Magnolia denudata	Magnoliaceae	deciduous trees	G1/G2/G4-G7/G9;J3/J5;D ₂ 1/D ₂ 2.
2	purple magnolia	Magnolia liliflora	Magnoliaceae	deciduous shrub	G1/G2/G5/G6; J2/J5; D ₂ 2.
3	Erqiao Magnolia	Magnolia soulangeana	Magnoliaceae	deciduous small tree	G1~G3/G5~G7/G10;J1/J2/J4/J5; D ₁ 1/D ₁ 4;D ₂ 1~D ₂ 3/D ₂ 6.
4	Huangshan Mulan	Magnolia cylindrica	Magnoliaceae	deciduous small tree	G4.
5	Pistacia chinensis	Pistacia Chinensis	Anacardiaceae	deciduous trees	G2.
6	Sassafras	Sassafras tzumu	Lauraceae	deciduous trees	G3/G4/G7/G8;D ₂ 2/D ₂ 4.
7	Mujiangzi	Laurus cubeba	Lauraceae	deciduous shrubs	G3~G5/G8;D ₂ 2/D ₂ 4.
8	Yamaguchi	Lindera reflexa	Lauraceae	deciduous small tree	G5; D ₂ 4.
9	Paulownia	Paulownia fortunei	Scrophulariaceae	deciduous trees	G2/G4/G5/G7;J4/J5;D ₁ 1~D ₁ 8; D ₂ 1/D ₂ 2/D ₂ 4/D ₂ 5.
10	Paulownia tomentosa	Paulownia tomentosa	Scrophulariaceae	deciduous trees	G5; D ₂ 4.
11	Bauhinia	Cercis chinensis	Sumaceae	deciduous small tree	G1~G7/G10;J1~J3/J5;D ₁ 1/D ₁ 3/D ₅ /D ₇ ; D ₂ 2/D ₂ 4.
12	giant redbud	Cercis chinensis	Sumaceae	deciduous trees	J4/J5;F2.
13	Wisteria	Wisteria sinensis	Papilionaceae	deciduous vine	G1/G2/G5.
14	plum	Prunus mume	Rosaceae	deciduous small tree	G1~G3/G5~G7;J1;D ₂ 2.
15	Beauty Plum*	Prunus mume 'meiren'	Rosaceae	deciduous small tree	G2;D ₂ 2.
16	Weeping Plum*	Weeping Plum*var.pendula	Rosaceae	deciduous small tree	G2.
17	Bitao	Prunus persica	Rosaceae	deciduous small tree	G1~G3/G5~G7;J1/J2/J5;D ₁ 4/D ₁ 8; D ₂ 2/D ₂ 4.
18	Purple Leaf Peach*	Prunus persica 'Atropurpurea'	Rosaceae	deciduous small tree	G1/G2/G5/G7;J1/J2;D ₁ 4;D ₂ 2/D ₂ 4.
19	plum	Prunus salicina	Rosaceae	deciduous small tree	G2;J1.

Table 2. List of common spring ornamental leaf plant species in Changsha

Species name	scientific name	Family name	plant type	spring leaf color	Application method
Pistacia chinensis	Pistalia chinensis	Anacardiaceae	Arbor	Purple red	solitary plant
Grape	Vitis vinifera	Vitaceae	Fujiki	Purple red	Planting in patches or in groups
plum bossom	plum bossom	Rosaceae	Arbor	Purple red	Solitary or group planting
Golden camellia tea	Camellia chrysantha	Theaceae	Small arbor	Red	cluster planting
Osmanthus fragrans	Osmanthus fragrans	Oleaceae	Shrub or small arbor	Red	Solitary planting or row planting
privet	Ligustrum lucidum	Oleaceae	Shrub or small arbor	Red	Group and cluster planting
Cherry blossoms	Prunus yedoensis	Rosaceae	Arbor	Red	Group planting and patch planting
blackberry	Ampelopsis japonica	Vitaceae	Fujiki	Red	Group planting and patch planting
Salix	Salix	Salicaceae	Arbor	Bright yellow-green	Solitary or group planting
Begonia	Malus halliama	Rosaceae	Small arbor	Pink	Solitary or group planting
Euonymus	Ewonymus alatus	Celastraceae	shrub	Red	Solitary or cluster planting
five-cornered maple	Acer mono	Aceraceae	Arbor	Pink	Solitary or cluster planting
compound feather leaf luan	Koelreuteri aniculata	Sapindaceae	Arbor	Red	Solitary or group planting
Camphor	Cinnamomum camphora	Lauraceae	Arbor	yellow	Solitary planting orSolitary planting or columns plating
Ailanthus ailanthus	Ailanthus altissima	Quasiaceae	Arbor	Red	Solitary planting or columns plating
Pomegranate	Punica grantum	Pomaceae	Shrub or small arbor	Red	Solitary planting or cluster planting
toon	Toona sinensis	Meliaceae	Arbor	Red	Solitary planting or columns plating

1.4. Investigation content and methods

Content: Spring plant species and plant landscapes created.
 method: Combined with dendrology, botany and ecological theories, the types of plant combinations are listed: first, according to the structure of the plant community, plants are divided into three categories: upper plants, lower plants and middle plants; secondly, according to the physical characteristics of the plants, they can be divided into common plants. There are two categories: green plants and deciduous plants. Combining these two types, the plant configuration can be divided into 8 types:

1. upper evergreen plants + middle evergreen plants + lower plants
2. upper evergreen plants + middle deciduous plants + lower plants
3. upper deciduous plants + middle evergreen plants + lower plants
4. upper deciduous plants + middle deciduous plants + lower plants
5. upper evergreen plants Green plants + lower plants
6. upper deciduous + lower plants
7. middle evergreen + lower plants
8. middle deciduous + lower plants

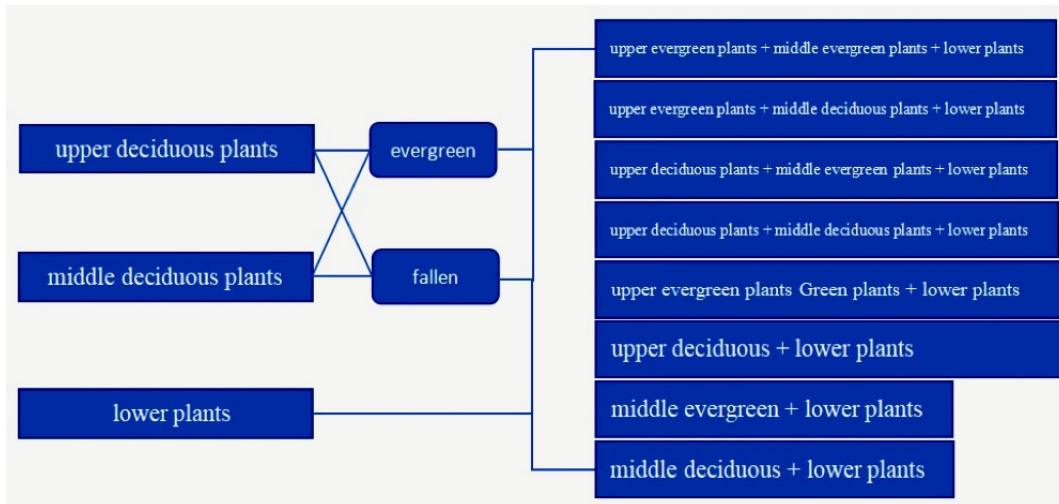


Figure 1. As shown below

In addition to the above patterns, there are some special cases, such as the combination of camphor and weeping willow, the combination of fringe flower and Haitong, this combination of upper and upper, middle and middle, only appear in a certain tree species as the dominant community, one of them is only a supporting role. Such as the combination of fringe flower and Haetong, fringe flower plays the role of embellishment, local break Haetong's overall colour, so that the unity has changes.

2. Introduction of Spring Landscape Plants at The Survey Site

2.1. General introduction of plants in the Wedding Cultural Garden

According to the survey, the main flowers and leaves to watch in Liuyang River Wedding Cultural Park in spring include Sophora japonica, weeping willow, purple spring tree, Japanese evening cherry, white orchid, redbud, red maple, wax plum, golden privet, red-leaf heather and nandina, safflower wood, camellia, rhododendron, knotweed, Japanese iris, dianthus, etc. Because they have strong adaptability to the environment, they grow well.

2.2. Introduction of plant species

(1) *Sophora japonica* Linn's adult plant measures 15 to 25 meters tall and has a diameter at breast height of 2 meters or greater. The bark is dark Gray, and the crown is spherical. When older, it becomes oblate spherical or obovate. It is also very suitable for planting in parks, around buildings, in residential areas and on lawns. *Sophora japonica* should be

planted opposite or in rows in front of the door or planted alone beside the rocks in the pavilion. It can also be used for greening industrial and mining areas. In industrial and mining areas, it can also be utilized for greening.

(2) *Salix babylonica* L is a tall deciduous tree with wide distribution and strong vitality. It is one of the common tree species. Weeping willow is also a commonly used street tree in landscaping. It has high ornamental value and is inexpensive, and it is deeply loved by gardeners all over the world.



Figure 2. *Salix babylonica* L

(3) *Prunus lannesiana* Wilsshi is a genus of Rosaceae. 3-8 meters high with gray-brown or gray-black bark lip-shaped lenticels. The petals are arranged in a symmetrical pattern. The drupe is pink and the fruit is spherical or ovoid, purple-black. Sakura is a shallow-rooted tree species that likes sunlight, deep, fertile, well-

drained soil, with some resistance to cold. Large and fragrant varieties of Japanese evening cherry blossoms,

including the 'Shikizakura', which bloom all year round, are suitable for planting next to garden buildings or in solitary rows.



Figure 3. *Prunus lannesiana* Wilsshi

(4) *Chimonanthus praecox* (L.) Link: *Chimonanthus praecox* (L.) Deciduous shrub, up to 3 meters high; distributed in Jiangsu, Zhejiang, Hubei, Sichuan and Shaanxi, and cultivated in all provinces. It likes sunshine, but is also slightly tolerant of shade, relatively cold-tolerant, and drought-tolerant. It is said to be "the wintersweet that survives drought". It is afraid of waterlogging, so it is not suitable for cultivation in low-lying areas. The soil quality is not strict, but light loam with good drainage is suitable. Slice planting, main view configuration, mixed planting configuration, leaky window view, rock and rockery configuration.

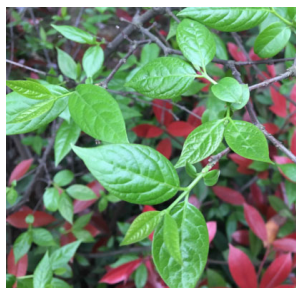


Figure 4. *Chimonanthus praecox* (L.) Link

(5) *Michelia* × *alba* Candolle: Magnoliaceae genus *Michelia*. Evergreen tree, 17 meters high, with white flowers, extremely fragrant; 10 tepals, bright red when ripe. The flowering period is from April to September, blooming in summer, and usually does not bear fruit. It is widely distributed in all provinces along the Yangtze River Basin, reaching Taiwan in the east and Sichuan in the west. Yunnan. Born in hilly areas and sparse shrubs. Produced in Yunnan. It likes light, is afraid of high temperatures, is not cold-tolerant, and is suitable for slightly acidic soil. It likes warmth and moisture, and is intolerant of drought and waterlogging. The orchid plant shape is upright, branched, and elegant. It can be cultivated in open gardens in the south and is the backbone tree species in southern gardens.

(6) *Cercis chinensis* Bunge: *Cercis chinensis* Bunge, Fabaceae. Clustered or solitary shrub, 2-5 meters tall; bark and twigs grayish white. The leaves are papery, nearly round or triangular, with a shallow to deep heart-shaped base. The flowers are purple-red or pink, with more than 2-10 flowers in bunches, clustered on old branches and trunks. The pods are flat, narrow and green. Produced in the southeast of my country, it reaches Hebei in the north, Guangdong and Guangxi in the south, Yunnan and Sichuan in the west, Shaanxi in the northwest, and Zhejiang, Jiangsu and Shandong provinces in the east. Warm zone tree species, more cold tolerant. Likes light, slightly tolerant of shade. Prefers fertile, well-drained soil and does not tolerate moisture. Strong germination ability and resistant to pruning. It is mostly planted in gardens, beside houses, temples and streets as landscape trees.

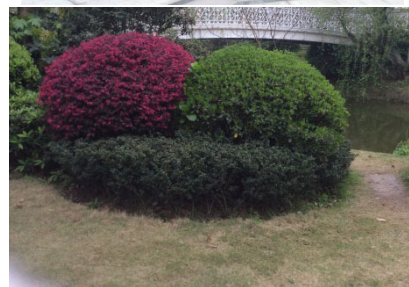


Figure 5. *Cercis chinensis* Bunge

(7) *Loropetalum chinense* var. *rubrum*: *Loropetalum*, Hamamelidaceae. Shrubs, sometimes small trees, much branched, branchlets with stellate hairs. Leaves leathery, ovate, apex acute, base obtuse, flowers in clusters of 3 to 8, shortly pedicellate, white, opening before new leaves or at the same time as young leaves. Mainly distributed in the middle and lower reaches of the Yangtze River and areas south of it; also distributed in North of India. It is produced in Liuyang City and Changsha County, Hunan, Suzhou, Wuxi, Yixing, Liyang, and Jurong, Jiangsu. Flowers in clusters of 3 to 8, shortly pedicellate, white, opening before new leaves or at the same time as young leaves. The red fringe flower is a precious native foliage ornamental plant native to Hunan, with strong ecological adaptability, pruning resistance and easy

modelling, widely used in urban greening and beautification, such as colour hedges, moulded flower beds, shrubs and balls, colourful foliage small trees, staking modelling and bonsai.

(8) *Camellia japonica* L: *Camellia* genus in the family Theaceae. Shrub or small tree plant with leathery, oval leaves, terminal flowers, red, sessile; spherical capsule, flowering period from December to April. *Camellia* is native to China. Likes warm, humid and semi-shady environment. Afraid of high temperatures and avoid the scorching sun. Mainly distributed in Zhejiang, Jiangxi, Sichuan, Chongqing and Shandong in China, and also in Japan and the Korean Peninsula. There are wild species in Sichuan, Taiwan, Shandong, Jiangxi and other places, and they are widely cultivated in various parts of China. *Camellia* tolerates shade and grows best when placed on the edge of sparse forests in the Jiangnan area. Planting beside rockeries can form a small landscape of rocks. Three or five plants are scattered near pavilions, which is particularly elegant. If a *camellia* garden is set up, the flowers will be as gorgeous as brocade. In the courtyard, a few plants can be planted scatteredly in a corner of the courtyard wall, which is natural and unrestrained; in the north, potted plants are suitable for viewing, and they can be placed at the entrance of the foyer, conference rooms, and public places to achieve good results; they can be planted on the balcony and in front of the window of the home to show the fullness of spring.



Figure 6. *Camellia japonica* L

(9) *Edgeworthia chrysantha* Lindl: *Edgeworthia chrysantha* Lindl. Shrub, about 0.7-1.5 meters tall, with thick, brown branchlets, often with three-branched branches. The young branches are often pubescent. The flowers are fragrant and sessile. The fruit is oval and green. The flowering period is in late winter and early spring, and the fruiting period is in spring and summer. It likes to be born in moist and fertile land. Produced in Henan, Shaanxi and provinces and regions south of the Yangtze River Basin. The tree has a spherical crown and beautiful branches and leaves. It is suitable for planting in the garden or as a potted plant. The knotted incense has an elegant posture and its soft branches can be tied into knots. It is very attractive and suitable for planting in front of the garden, roadside, waterside, between rocks and in the corner of the wall. There are many potted plants for viewing

in the north.



Figure 7. *Edgeworthia chrysantha* Lindl

(10) *Rhododendron* L: *Rhododendron* in the family Ericaceae. Evergreen or deciduous shrubs, rare small trees. The leaves are alternate and entire, flowers are often multiple and form a terminal umbel-like raceme. Capsule. It is widely distributed in all provinces along the Yangtze River Basin, reaching Taiwan in the east and Sichuan in the west. Yunnan. Born in hilly areas and sparse shrubs. *Rhododendron* plants like a cool, moist and ventilated semi-shady environment, and are afraid of both intense heat and severe cold. Make hedges and decorative plants.

(11) *Dianthus chinensis* L: *Dianthus* genus of the Caryophyllaceae family. Perennial herb, 30-50 cm tall, flowers solitary at the ends of branches or several flowers gathered into cymes; Seeds is black, oblate. The flowering period is from May to June, the fruiting period is from July to September. Mainly produced in Hebei, Sichuan, Hubei, Hunan, Zhejiang and Jiangsu province. It is cold-tolerant, drought-tolerant, but intolerant to heat. In summer, it often grows poorly or wilts, so you should pay attention to shading and cooling during cultivation. It can be used in flower beds, flower borders, flower stands or potted plants in the garden. It can also be used for rock gardens and lawn edge embellishments. Cut flowers are also great for viewing.



Figure 8. *Dianthus chinensis* L

(12) *Iris japonica*: *Iris japonica*. Perennial herbs. The rhizome is creeping and has long branches. The leaves are mostly self-rooted, 2 rows, sword-shaped, flat, with many flowers, light blue-purple, arranged in sparse racemes; capsule. It is native to the vast area south of the Yangtze River in my country and is also found in Japan. Shade tolerant and cold tolerant. Scattered in moist places under forests and beside streams. It is often planted in flower beds or forests as ground cover plants in gardens.



Figure 8. *Iris japonica*

(13) *Acer palmatum* Thunb: *Acer* family *Acer*. Deciduous small tree. The single leaves are alternately opposite and often clustered on the top of the branches. The leaves are palmately divided and red in spring and autumn. Flowering period is April-May. Mainly distributed in subtropical China, Japan and South Korea, it likes humid, warm climates and cool environments. It is more tolerant of shade and cold, it avoids exposure to the sun, but it can grow under full sunlight in spring and autumn. The soil requirements are not strict. They are mainly solitary plants and scattered plants. They should be placed in the center of the lawn, in front of and behind tall buildings, in corners, etc. They can also be potted in shapes such as exposed roots, leaning on rocks, cliffs, and dry shapes, which are elegant and unique.

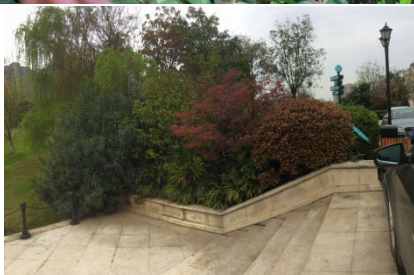
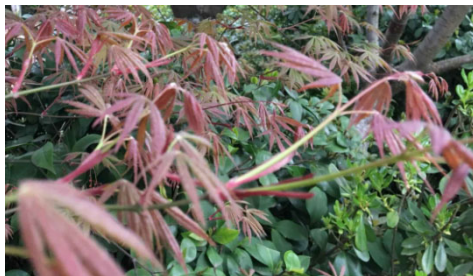


Figure 9. *Acer palmatum* Thunb

(14) *Photinia fraseri*: *Photinia* genus in the Rosaceae family. Evergreen shrub, 1 to 2 meters high, with compact plant shape and upright stems, green lower part, purple or red upper part of the stem, with many branches. The leaves are leathery, oblong to obovate-lanceolate, with green or purple lower leaves and bright red or purple upper leaves. Flowering period is April-May. The fruiting period is October. There are about 60 species in the world, mainly found in the subtropical and temperate regions of southeastern Asia, eastern Asia and North America. It likes light, slightly tolerates shade, likes warm and humid climate, tolerates drought and barrenness, intolerant of water and moisture. Use it as a street tree in green spaces or as a solitary plant as a courtyard shade tree.

(15) *Nandina domestica*: *Nandina domestica*, Berberidaceae. Small evergreen shrub. The stems are often clustered and rarely branched, 1 to 3 meters high. The young branches are often red, turning red and white in winter, it is fragrant. The berries are spherical and bright red when ripe. The flowering period is from March to June, The fruiting period is from May to November. Southern nature likes a warm and humid environment and is more tolerant of shade. Also hardy to cold. Easy to maintain. Produced in China's Yangtze River Basin and Shaanxi, Henan Huangchuan Butaji Town Hebei, Shandong, Hubei, Jiangsu, Zhejiang, Anhui, Jiangxi, Guangdong, Guangxi, Yunnan, Guizhou, Sichuan and other provinces. It is mostly planted at the corners of buildings, matched with rocks and potted plants for viewing.



Figure 10. *Nandina domestica*

3. Plant Landscape Evaluation

3.1. Evaluation method

This article uses the Analytical Hierarchy Process (AHP) to conduct landscape evaluation based on community plant species and spatial distribution. The visual effect part of the analytic hierarchy process evaluation uses photos and on-site comprehensive scoring. The evaluators were 20 landscape undergraduate students and 10 master's degree students. The evaluation questionnaire was completed by the evaluators based on the photos. The ecological impact part of the evaluation is scored based on the analysis of community

sample plot survey data, and the social impact part is scored by the researcher. [7]

3.2. Establish AHP evaluation model

The research uses the 1-9 scaling method to make a relative comparison between each two elements, and constructs a judgment matrix through the public's judgment and

comparison of the following relationships.[8]

3.2.1. Research on establishing AHP evaluation model

Relative comparisons between each two elements were carried out using the 1-9 scale method, and judgement matrices were constructed by massing judgement comparisons of the following relationships (see Table 1).

Table 2. AHP comparison judgment matrix element comparison scale meaning

Score	1	3	5	7	9
implication	equally important	slightly important	important	Very important	absolutely important
Remark	2, 4, 6, 8 is the median value of the above adjacent judgments				

3.2.2. Calculate relative weight and consistency test

Based on the returned questionnaires, the scales of the evaluation factors were counted, and the relative weights and consistency tests were calculated using hierarchical analysis software.

3.2.3. Establishment of landscape evaluation system

According to the selection principles and selection methods of plant landscape evaluation indexes, through collecting a large amount of information, analysing and collating the existing data, referring to the research results of the predecessors, targeting the current situation of the green space and the characteristics of the community in the Liuyang River Wedding Garden, and referring to the knowledge of the garden, ecology and other aspects, a total of nine evaluation factors were screened, with the highest level as the target level (A), consisting of three guideline level indicators of ecological effect, visual effect and social effect, and each guideline level indicator was composed of three evaluation factors (see Table 2).

Table 3. Liuyang River Wedding Park Urban Park Landscape Ecological Evaluation System

Target layer(A)	Rule layer(B)	Factor layer(C)
Evaluation of green space plant landscape in Liuyang River Wedding Garden	ecological effect	Plant species diversity (C1)
		Impact of plant communities on the environment (C2)
		Plant life form diversity (C3)
	visual effects	Color and seasons (C4)
		Plant community landscape level (C5)
		Coordination with other garden elements (C6)
	social effect	Accessibility of plant landscape (C7)
		Plant form (C8)
		Stayability (C9)

The rating scale for the evaluation factors is shown in Table 3. In the specific evaluation process of the AHP method, the

species diversity uses the species richness index, the impact of the plant community on the environment is evaluated by the community canopy density and the vertical structure of the community, and the diversity of life forms is evaluated by The Simpson index was obtained. The qualitative indicators, namely color and seasonal phase, community landscape level and plant morphology, were scored by 20 garden undergraduates and 10 graduate students through photos. The scores were divided into three levels: 15, 10 and 5. The coordination of garden elements, accessibility and stayability of plant landscapes are scored by investigators. Then the landscape quality index of each green space is calculated based on the factor scores and weight values. The greater the green space landscape quality index, the higher its landscape value.

Table 4. List of plant landscape evaluation scores

Target layer(B)	Factor layer(C)	Score
Ecological effect	Plant species diversity (C1)	Rich15 relatively rich10 generally5
	Impact of plant communities on the environment (C2)	Better15 good10 generally5
	Plant life form diversity (C3)	Rich15 relatively rich10 generally5
Visual effects	Color and seasons (C4)	Better15 good10 generally5
	Plant community landscape level (C5)	Rich15 relatively rich10 generally5
	Coordination with other garden elements (C6)	Better15 good10 generally5
Social effect	Accessibility of plant landscape (C7)	Better15 good10 generally5
	Plant form (C8)	Better15 good10 generally5
	Stayability (C9)	Better15 good10 generally5

3.3. Results and analysis

3.3.1. Analysis of green space landscape of Liuyang River Wedding Cultural Park using AHP analysis method

Through AHP landscape evaluation software, the weight value of each evaluation factor is calculated. Calculate the landscape quality index of each green space according to the formula. Finally, the grade of the plant community landscape is determined according to the formula $CEI = S/S_0 \times 100$. Among them, CEI is the comprehensive evaluation index, S

is the evaluation score value, S_0 is the ideal value (the highest level of each factor is multiplied by the weight), CEI was used as the basis for grading and was classified into I, II, III and IV using the percentage difference grading method.

3.3.2. Result analysis

Among the 15 communities evaluated, there are 2 level I plant community landscapes, accounting for 13% of the total number of communities, while there are 4 level II plant community landscapes, accounting for 27% of the total number of communities, 7 level III plant community landscapes, accounting for 47% of the total number of communities, 2 level IV landscapes, accounting for 13% of the total number of communities. In the evaluation, level III landscape is the most, and level I landscape is less, which indicates that the Liuyang River Wedding Garden lacks of high quality plant landscape, and overall it seems that the Liuyang River Wedding Garden is in the middle to upper level of plant community landscape.

4. Conclusion and Discussion

This paper established an AHP evaluation model to conduct landscape evaluation on 15 sample plots, and screened out ecological effects, visual effects and chemical comparisons. The quantitative results are compared with the plant composition of the sample plot and the actual landscape experience. The results are relatively consistent, so a preliminary conclusion can be drawn. This evaluation system can be used as a reference system for the evaluation of the green space landscape of Changsha Wedding Cultural Park.

Among the 15 communities evaluated, there are 2 Level I plant community landscapes, accounting for 13% of the total communities, and 4 Level II plant community landscapes, accounting for 27% of the total communities. There are 7, accounting for 47% of the total number of communities, there are 2 Level IV, accounting for 13%. There is little difference in the quality of plant landscapes in Liuyang River Wedding Cultural Garden. Most of the plant landscapes have good visual quality and rich landscapes, but there are not many high-quality characteristic landscapes. The main reason is that there are many repetitions of plant selection, application and configuration, and obvious similarities, resulting in landscape characteristics. It is not obvious that there is still a lot of room for improvement in the green space landscape of Liuyang River Wedding Cultural Park.

By analyzing the landscape characteristics of typical communities, combined with the quantitative analysis of the AHP model, suggestions are made for the construction of plant communities in the Liuyang River Wedding Cultural Garden: when the green space area is certain, the vertical structure level of the community should be increased, and seasonal phases and colors should be adopted. Diverse and rich types of ornamental plants, using a larger proportion of native tree species and arranging them into artificial plant communities that are in harmony with the surrounding

environment, will result in higher quality green space landscapes and better ecological benefits.

The analytic hierarchy process has its advantages and disadvantages when conducting landscape evaluation. There are certain subjective errors in the determination of weights and the scoring of each indicator. Although scoring based on photos can better show the overview of the landscape, it does not have the same flexibility of the landscape is still not well displayed when you are on the scene, which reduces the effect of the landscape. At the same time, due to the limited number of test plots, it cannot fully reflect the overall landscape quality of the Liuyang River Wedding Park green space. Therefore, the evaluation system needs to be further improved by obtaining more data.

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