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RESEARCH ARTICLE

THE IMPORTANCE OF APPLICABILITY PRINCIPLE IN PLANT COMBINATION IS DISCUSSED — THE EFFECT OF NATIVE PLANTS WITH OBVIOUS APPLICABILITY CHARACTERISTICS ON ENVIRONMENTAL LANDSCAPE

Shunyao Zhang*

Faculty of Art and Communication, Kunming University of Science and Technology, Kunming 650000, China
**Corresponding Author Email: 1781973321@qq.com*

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ABSTRACT

The principle of plant suitability is of great significance to plant configuration. The plant configuration that meets the principle of plant suitability can have an excellent effect on the environment in both ecological effect and ornamental effect. However, the plant configuration that violates the principle of plant applicability can not only cause ecological damage to the environment, but also bring serious economic losses to the society. Nowadays, the unique value and characteristics of native plants have been gradually discovered by people, and native plants have begun to integrate into the urban landscape planning and design. The outstanding applicability of native plants has brought visible ecological and economic benefits to the urban environmental landscape. In plant allocation, we should give full consideration to the applicability characteristics of local plants, so that local plants can have a more positive impact on the environmental landscape and give play to the important value of local plants.

KEYWORDS

native plants, plant configuration, applicability principle, urban landscape

1. The Concept of Applicability Principle in Plant Configuration

The applicability principle in plant configuration inquires meeting the requirements in various aspects such as ecology, economy, aesthetics and function by means of plant configuration methods that are appropriate to local conditions and suitable to the actual needs of the environment, so that plants can achieve the ideal effect and stable form in the landscape space. The applicability principle of plant configuration includes: ecological applicability principle, economic applicability principle, aesthetic applicability principle and functional applicability principle.

2. The Concept of Native or Indigenous Plants

Generally, native plants are of two types. On one hand, refers to plants that are highly adaptable to local natural conditions in terms of physiology, genetics and morphological characteristics after long-term natural selection and species evolution. On the other hand, naturalized plants introduced by foreigners that have been fully adapted to the local ecological environment such as soil and climatic conditions after a long period of growth and development in the local area. Native plants have been influenced by environmental factors like climate, soil and culture for a long time, resulting in unique regional plant characteristics. Native plants have outstanding applicability to the environmental landscape and can produce strong ecological and economic benefits to the local environment. In addition, native plants also have unique ornamental value and have other functions such as purifying the air and green environment.

3. The Adaptability of Native Plants

3.1 Aesthetically Applicable Characteristics

Native plants have aesthetically applicable characteristics, which meet the principle requirements of aesthetic applicability in plant configuration. Native plants have higher ornamental value and unique regional and local characteristics than the general exotic introduced plants. Increasing the proportion of regional native plants in environmental landscape can effectively solve the problems of too single plant species and simple plant community structure in environmental landscape, which is conducive to enhancing the ornamental nature of urban landscape, enriching its ornamental content and highlighting design features.

3.2 Economically Applicable Characteristics

Native plants possess economically applicable characteristics and meet the requirements of the principle of economic applicability in plant configuration. Native plants have stronger survival advantages than exotic plants. They can adapt to various local natural environment conditions and have higher survival rates than the later, the high survival rate and easy management of native plants greatly reduce planting and cultivation costs, making them more cost-effective compared to exotic plants and realizing their economic benefits.

3.3 Ecological Suitable/Eco-Friendly Characteristics

Native plants possess ecological suitable/eco-friendly characteristics and meet the requirements of the principle of ecological applicability in plant configuration. Native plants are an important part of the local ecosystem, not only can they adapt to the local living environment, but they are also

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more resilient to harsh weather conditions than exotic plants, they can improve the living environment and have outstanding advantages in improving soil quality and regulating local climate, in fact, native plants play a role in maintaining ecological balance.

3.4 Functional Applicability Characteristics

Native plants have functional applicability characteristics and meet the requirements of the principle of functional applicability in plant configuration. Native plants have a variety of functions, such as the function of beautifying the environment, protecting and improving ecological functions, providing people with resting places and production functions, etc. Designers strengthen and pay attention to the consideration of the functional characteristics of native plants in plant configuration, which can make the landscape space create a fully functional landscape space design through the use of plant configuration and meet the multiple functional needs of the environmental landscape for native plants.

4. Analysis of The Applicability of Native Plants Characteristics in Excellent Landscape Design Works

4.1 Application of Native Plants in Zhongshan Qijiang Park

4.1.1 Introduction to the Case of Zhongshan Qijiang Park

Zhongshan Qijiang Park is located in Zhongshan City, Guangdong Province. Qijiang Park is a theme park reconstructed from the former site of Yuezhong shipyard in Zhongshan City, Guangdong Province. The designer Yu KongJian introduced the design concepts of Western environmentalism, ecological restoration and urban renewal into his design, which is a successful example of the protection and reuse of old industrial sites.

4.1.2 Application and Role of Native Plants in Zhongshan Qijiang Park

Yu KongJian made a bold design in Zhongshan Qijiang Park. He regarded native plants as “bigfoot aesthetics” and believed that native plants are very wild, so he integrated native plants into the landscape’s planning and design of the city and landscape ecological restoration and protection, creating “the beauty of wild grass” the landscape effect. The designers used different species of native plants to create an aquatic plant community. According to changes of water level and depth, native plants were selected to form an aquatic-biogenic-hygrophic-mesophytic plant community zone. All plants are wild native plants, making Zhongshan Qijiang Park a showcase for a variety of native aquatic plants, so that people who live far away from nature , in cities for a long time can have the opportunity to appreciate the beauty of natural ecology and wild plants.

The successful application of native plants in Zhongshan Qijiang Park proves that native plants also have strong ornamental functions. Through the appropriate selection of native plants, native plants give full play of their applicability characteristics, while having ornamental effects. Native plants also give the site a unique atmosphere. By following the principle of applicability in plant configuration, native plants give full play to their ecological improvement and restoration ability, and the configuration of native plants in Zhongshan Qijiang Park achieves the unification of ornamental and ecological aspects of the environmental site. This case fully illustrates the importance of following the applicability principle in selecting and configuring native plants for the creation of environmental landscape.

4.2 Application of Native Plants in Nan Luming Park in Quzhou, Zhejiang Province, China

4.2.1 Introduction to the Case of Nan Luming Park

Luming Park is located on the west coast of Shiliang River in the western district of Quzhou city, at the heart of the city's new town center, an “oasis” amidst high-density urban buildings. The designers integrated agriculturally productive landscapes with low-maintenance cost native plants into the landscape design to create a productive and beautiful urban park.

4.2.2 Application and Role of Native Plants in Quzhou’s Nan Luming Park

The landscape architects actively explored the innovative concept that an urban park should not only be a recreational green space to satisfy the public, but also an ecological green space to better maintain ecological balance. The project uses the design strategies of “retaining the local landscape background” and “productive and varied urban field”, integrating agriculturally productive landscapes and low-maintenance cost native plants into the landscape design, the original landscape base, natural habitats, the red sandstone, natural vegetation, the original farmland water system, riverbank trees, and the original ecological balance, etc. are all preserved intact. On the basis of preserving the natural vegetation, local productive crops are planted on the abandoned land with four-season rotation: rape flowers in spring, sunflowers in summer and autumn, buckwheat in early winter, and gorgeous native herbs and wildflowers in rotation. The combination agricultural landscape and native plants at Quzhou’s Luming Park, attracts people to organize various activities in the park in different seasons; the fragrance of flowers and green grass all seasons also meet the citizens' demand for natural countryside.

Local plants play an important role in Quzhou’s Luming park. They not only play their ecological and ornamental functions, but also carry the cultural memory of the site. The seasonal gorgeous flowering meadows in the park, with the spread of social media, have attracted a large number of citizens to gather here. They also remind people who are busy in the city of their awareness of the changes of the seasons and revisit the memories of their hometown which have become increasingly blurred.

5. The Importance of Following The Principle of Applicability for The Configuration of Native Plants in The Creation of Environmental Landscape

5.1 Improves the Ornamental Value of the Environmental Landscape

Following the principles of aesthetic applicability of native plants, such as paying attention to the multi-level nature of plant communities, forming the principles of unity in color and harmony in nature, the landscape space created is more ornamental. Native plants have different visual beauty at different stages of growth. The leaves, fruits and flowers of native plants can create more beautiful landscapes and stimulate people's vision. When configuring plants, by considering the sign characteristics of native plants, people can feel the beauty of the alternation of four seasons in the environmental landscape.

5.2 Highlighting Regional Characteristics

Following the principle of applicability in the configuration of native plants can make native plants emit their own distinctive regional characteristics and cultural connotations, create a unique regional atmosphere for the environmental landscape, make the landscape space more regional, and avoid the phenomenon of “one side of a thousand cities”. Native plants can make the landscape space more unique in terms of regional characteristics while being both ornamental and ecological.

5.3 Economic Role

By following the principle of economic applicability and selecting native plants that conform to the local climate and environment, the cost of plant cultivation and management are reduced. Native plants have good adaptability and high survival rate. It is relatively easy to cultivate and manage after planting, which can reduce and save management costs. In fact, the unique landscape created by local plants will also drive the development of local tourism. For example, in the blooming season, tourists from all over the world come to Yunnan to enjoy the flowers. It can be seen that native plants in the landscape space can not only beautify the environment and improve the landscape ecosystem, but also improve the popularity of plants in the landscape space and drive the development of local related industries.

5.4 Improve the Scientific Nature Environment Planning and Design of The Landscape

By following the principle of applicability of native plant configuration, native plants can meet the needs of environmental landscape in terms of ecological, economic, aesthetic and functional plant configuration, making the planning and design of environmental landscape more scientific.

5.5 Native Plants Can Provide a Shielding and Protective Effect the Ecological Environment

By following the principle of ecological suitability of native plants, understanding the ecological habits of plants, and following the requirement of “following nature and simulating nature”, plants can be configured in a “site-specific” manner. Native plants that meet the principle of ecological suitability can promote ecological balance in the environmental landscape, produce ecological effects and improve the ecological environment.

5.6 Meet the Multiple Functional Needs of The Environmental Landscape for Plants

By following the principle of functional applicability and the concept of harmonious coexistence between Humans and nature, native plants are made to play their multiple functional roles, such as beautifying the environment, protecting and improving ecology, and other functions, so as to meet, and satisfy, the multiple functional needs of plants for the environmental landscape.

6. Conclusion

As an important element in the design of environmental landscapes, native plants need to follow the principle of applicability of plant configuration and flexibly select plant species in combination with landscape design needs to create native and ecological landscape with local characteristics. In the process of environmental landscape creation, it is necessary to make full use of the applicability characteristics of native plants based on regional characteristics, combined with the current situation of local ecological construction and economic development, to maximize the ecological, economic, aesthetic and functional effects in the environmental landscape , to design excellent landscape design works in harmony with nature, and to realize the ecological beauty, cultural beauty, artistic and natural beauty of the environmental landscape.

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