

Design and Application of Garden Flowers in Urban Greening Landscapes

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Abstract: With the development of economics in China, people pay more attention to quality of life. Urban greening takes many forms, and garden flowers are a key element of that. Many :atypical of them and how to utilize these characteristics to improve urban greening standard is a hot topic. The aim of this paper is to improve the scientific nature of urban greening landscape design and provide people with a comfortable living environment by detailed the strategies and principles for garden flowers design and application in urban greening landscapes.

1. Introduction

With rapid urbanization, steel and concrete have completely matched the space of the urban area, people are building a much stronger demand for natural ecosystem. Urban greening landscapes are crucial connections between humans and nature. Garden flowers enter the cold and grey urban realm as dynamic elements who bring to life through their different shapes and colors. They enhance the ecology as well as influence urban characteristics, and fulfill residents' spiritual demands. Accordingly, studying the design and application principles of garden flowers in urban greening spatial landscapes, as well as exploring their design and application strategies that are consistent with ecological laws and citizens' demands, has even deeper significance.

2. Design and Application Principles of Garden Flowers in Urban Greening Landscapes

2.1 Aesthetic Principle

Therefore, for the design of urban greening landscapes using yard flowers, in accordance with aesthetic principles, landscape quality enhancement should be its core target while visual harmony and emotional resonance will be the design guideline. It is reflected in: Color coordination: Strive for a homogeneous principal tone and opposing accents. Use one or two colors as the base hues and then add very little contrasting colors. On freeway greenbelts, they could choose yellow coreopsis as the base color with red salvia dotting amid holly hedges for a visual treat.

Design of the form: Design a multi-level structure at different heights. Linear high background, rich mid layer and low foreground plant arrangement Black-eyed Susan, for example, can be the background of block walls; medium roses can fill the face (maybe feature instead? elements, and low-growing petunias can fill in the gaps on the ground. The contrast of textures creates visual tension and keeps the landscape from going flat.

Setting the scene: Use the right flower varieties for each setting Use bright, thornless petunias in children areas to keep playfulness going. Cultural districts are encouraged to choose local characteristics as the main subject of flowers, making flowers carriers of local emotions and culture.

2.2 Suitability Principle

The principle of suitability is the foundation of sustainable landscape effectiveness, and it is reflected in four dimensions in urban greening design using garden flowers:

Soil and climate adaptability: Choose flowering plants that are suited to the local soil and weather. In the north in cold and dry, select varieties that are resistant to cold and drought such as *Hylotelephium erythrostictum*, while *Bougainvillea* prefers warm and humid conditions can be avoided planting. For the rainy south, promote water-tolerant vegetational species like *Nymphaea*

and amend clay soils to deter root rot. Spatial functionality appropriateness: Consider walled or wind-resistant petunias at traffic nodes like overpasses and intersections to prevent sightline obstructions. Plant low-growing, odourless white clover in park rests. Plant *Sedum lineare* for its greening function and to reduce the loads on buildings on rooftops. Ecological Synergy fitness: Prefer native flower species to minimize the possibility of spread by invasive alien species. *Pyracantha fortuneana* and other ornamental fruit flowers can be planted to provide food for birds and form small ecological chains ^[1]. Cultural-relevant fit: Peonies mature in ancient urban like Xi'an, can highlight classic experience. Make flowers an important symbol of urban culture, incorporating the tea mountains of Yunnan in ethnic minority areas like Kunming.

2.3 Economic Principle

The design and application of garden flowers for urban greening landscape construction focus on cost control, which needs to follow economic law so that the greening project can keep sustainable development. The designers must maximize the use of resources through scientific planning, minimize comprehensive costs while meeting aesthetic and ecological requirements, and avoid resource waste. When you first start choosing what flowers to grow, focus on native flowers that are suited to the soil, climate and other conditions of your area. Since these flowers do not need additional shading or insulation facilities, they have higher survival rate and low replanting rate. From a configuration way focus on long time, multipurpose practical use to carry out the perennials as mainly seasonal flowers clouding sample. In addition, use intensive configuration methods (flower clusters) to reduce the management cost of distributed monoculture land and improve maintenance level.

3. Design and Application Strategies of Garden Flowers in Urban Greening Landscapes

3.1 Preliminary Planning: Precisely Adapting to Urban Conditions

Raising the quality of garden flowers as an urban greening component is based on preliminary planning. It requires many approaches to prevent blind planting that deeply integrates flowers and urban conditions. The geographic research base: Flower viability influenced by natural conditions. Gather multi-year climate data - up to 10 years. In the north, for example in Harbin - where temperatures can plummet to -30°C — cold-hardy plants like *Hylotelephium erythrostictum* should be planted. Choose heat and humidity tolerant species in summertime hot and humid Guangzhou of the south, *Nelumbo nucifera*. In shaded areas (due to high-rise buildings), you should not plant sun flowers, but shade-tolerant such as *Ophiopogon japonicus* and so on. As for soil, sample from all individual areas. Select *Tamarix chinensis* (saline-alkali soil in ancient city), and *Medicago sativa* (No nitrogen fixation ability, fully depleted soil fertility newly developed urban area) as your select species. Scientific functional matching: regional function-based planning. Spend per area traffic: Use petunias in the middle of road dividers for no view blockage. Plant *Ophiopogon japonicus*, which is shade resistant and shallow rooted in soil under the elevated girders of a bridge. Residential activity areas should not be an exception and should prioritize safety, comfort. *Portulaca grandiflora* for areas where children play, *Jasminum sambac* and *Osmanthus fragrans* when in there older age. Get a good estimate of costs: Estimate the planting and maintenance costs because you have to balance effects and investment. Native flowers usually cost less than imported flowers, while perennial flowers are more affordable than annual flower in the long run, making them suitable for largescale growing purposes. As far as facilities are concerned, mount the drip irrigation system in regions with sufficient water scarcity ^[2]. For instance, in arid northern cities it is less expensive to utilize drip irrigation in greenbelts than keeping the area watered manually. To sum up, the preliminary planning is a systematic work designed to find out what can be planted, what should be planted and how it will be done in this stage, laying a basic foundation for subsequent urban vegetation greening that helps enhance the quality of resource utilization and maintain landscape aesthetics.

3.2 Planting and Combination: Creating Diverse Landscape Layers

Planting and combination are the main methods to improve the texture of urban greening landscape. They need to disrupt two-dimensional arrangements by building three-dimensional constructions, blend colors and seasons at will, connect diverse scenarios to create the effects we want on landscapes. Building three-dimensional pattern: Establish the "tree-shrub-flower-grass" spatial framework, and form multi-layer landscape according to vertical height to prevent visual boredom. Choose ornamental flowering trees in the top tier to set the tone. Plant Crape myrtle and *Prunus serrulata* in roadsides to form flower tree corridors, and *Malus spectabilis* (a flowering crabapple) can also be planted in community parks for good smells and ornamental benefits. Middle layer: shrub flowers Use road greenbelts to move compact flowers by planting *Camellia japonica* and *Rosa chinensis*, roll gardens in waterfront areas with *Nerium indicum* for the richness of their visual design and wind protection. For the lower layer, use herbaceous flowers and ground covers. Plant *Hosta ventricosa* beneath trees and *Trifolium repens* on bare soil to create that three-dimensional structure with "flowering trees above, flowering shrubs in the middle, flowers and grasses below." Coordinated colors and seasons: Reasonably coordinate colors of peak flowering periods, stagger flowering time and achieve "scenery in all seasons and harmonious colors", which boosts sustainability for landscape. Stick to the idea of one overall, where key elements are accentuated through colors. Spring in warm yellow as the main color, such as on a park lawn planted *Hyacinthus orientalis*, tulip (*Tulipa gesneriana*) and so on. Use cool colors as the main hue in summer, *Nymphaea* and *Iris tectorum* trees are planted next to water for high-temperature relief from visual fatigue Use red as the theme color in autumn, and plant *Kochia scoparia* along these roadsides to create seasonal atmosphere. *Chimonanthus praecox* – Leathery waxy scented flowers, and evergreen shrubs keep the winter landscape from becoming too monotonous. Connect with scenes: For adjusting flower combinations based on the regional needs Planting petunias, Roses, and Crape myrtle within 1.5 meters tall (Refer to greenbelts along traffic arteries) so that it does not obstruct traffic. In pocket parks, plant the likes of *Camellia japonica*, *Malus spectabilis* and *Viola tricolor* (and allow enough room to walk for residents to sit down and enjoy the view) ^[3]. Create a poetic landscape and appropriate shoreline environment by planting *Salix babylonica*, *Nelumbo nucifera*, *Iris tectorum* along the waterfront corridors. The planting and combination should consider the dimensions of space, time and scenes, etc., increase the three-dimensional structure, color seasonal coordination and scene adaptation functions to improve the layering of urban greening.

3.3 Ecological Synergy: Building a Sustainable Greening System

The ecological synergy is a key link in the promotion of urban flower greening sustainable development. It is by improving the ornamental value and urban ecological function of flowers through selecting ecological flower species, optimizes green planting technology and establishes biological chain.

Choosing flower species with both ornamental and ecological importance: On the one hand, we should pick the flowers of ornamental plants, on the other hand, reduce invasive alien plant health risks. You can choose native wildflowers, including *Nelumbo nucifera* in the waterfront areas of Shanghai; they are suitable for local climate and soil conditions, labor-saving style, preventing alien species from displacing native plants. Also, make sure that your flower species have special ecological functions too — such as *Lavandula angustifolia* which attracts bees and amplifies the number of pollinating insects in cities^[4].

Using green planting technologies: Promote low-carbon and environmentally friendly planting and maintenance technologies to reduce ecological burdens. Data used to set up irrigation systems. In arid cities in the north, install rainwater collection devices in road greenbelts and use them for irrigation. Use organic fertilizers instead of chemical fertilizers: They aid in soil structure improvement, and reduce groundwater pollution. Manage pests and diseases mainly with biological methods, for example release of ladybugs to prey on aphids and using biopesticides such as matrine in place of chemical pesticides to protect birds and insects.

Constructing biological interaction chains: Improve the ecological diversity of flowers, animals and plants through reproduction. Establish a symbiotic system between them and develop urban micro-ecological chains. Also you can make a system of flowers with insects and birds visit *Lavandula angustifolia*, *Pyracantha fortuneana*, *Yi xing* (*Ilex chinensis*) in communities and parks to attract the insects and birds. Build a complete pocket ecosystem out in the waterfront area by planting *Nymphaea* which provide shelter for fish. These fish eat floating organisms and lessen algal blooms in the water itself. The fish are eaten by waterfowl, completing the cycle of wetland ecological balance. In conclusion, by the mutual integration of flower species, technologies and biological interactions in greening landscapes to make it not only ornamental but also ecologically functional will help build a sustainable urban ecological environment.

3.4 Cultural Integration: Highlighting the Unique Cultural Heritage of the City

The essence of urban floral greening lies in cultural integration. You can make flowers carriers of a city identity in these ways:

First, characterization of urban symbols as cultural symbols and the selection of spokespersons. That is, to arrange appropriate flower varieties based on the city's cultural elements by identifying its spiritual essence, ethnicity, and history ^[5]. In historical and cultural cities, flowers related to culture should be preferred. Such as, Xi'an based on Tang Dynasty culture can plant peonies and begonias at the bottom of ancient city walls, vividly (visually) and directly reflects the poetry hidden in "Chang'an flowers". Suzhou is noted for its Jiangnan formal garden culture, so it could plant lotuses and camellias near Pingjiang Road to echo the city's water-based charm. Modern cities, by contrast, should choose flowers that match their urban soul. For example, revolutionize streetscapes with jacarandas in innovative and energetic Shenzhen.

Second, create different storytelling scenarios and use floral landscapes to "tell stories." The Methods are entire cultural features added into a flower arrangement in different urban spatial elements. As important places to show culture, one can find theme-based flower landscapes in city squares. Wangcheng Square in Luoyang, for example, takes "peony culture" as the theme, planting a large number of peonies during the Spring Festival and taking advantage of peony-shaped flower borders to highlight that "Luo Yang has thousands of miles best opportunities." On the other hand, folk culture in local can be absorbed into a community and campus. For example, sowing apricot trees and matching them with chrysanthemums in Qufu's campuses reflect the identity of Confucian culture origin place.

Third, include cultural activities to strengthen cultural memory. Combining flowers with cultural events can reinforce the cultural perception of tourists and residents ^[6]. During its "Chrysanthemum Culture Festival", for example, Kaifeng takes advantage of the flower to shape ancient city gate formations inside Longting Park, visually highlighting the "capital of seven dynasties" historical heritage.

In short, flowers become urban cultural carriers through the implementation of cultural integration strategies such as flower combination design planting in scene arrangement and event organization to render and propagate urban characteristics.

3.5 Post-Maintenance: Ensuring Long-Term Landscape Sustainability

The needlework after maintenance plays an important role in the urban floral greening landscape quality, and it needs to take scientific care as well as dynamic monitoring to ensure sustainable stability. In daily fastidious upkeep, prune wayward branches and dried flowers frequently. For instance, when a rose plant wilts, cut the branches off immediately to help it bloom better in the future. Mix with water according to the flower varieties and characteristics should be rational. For example, keep moisture-loving irises with moist soil using drip irrigation while cutting back on irrigation for drought-resistant sedum spectabile. Additionally, apply thin fertilizers frequently. To encourage the growth of flowers, nitrogen fertilizer is applied in early spring, and phosphorus and potassium fertilizers should be added before flowering to increase the number of flowers. To minimize the soil pollution, organic fertilizers are preferred ^[7].

For season-specific management, detailed plans need to be prepared to handle a risk during the

respective seasons. For instance, on hot summer days there would be sunshades arranged for water lilies and other flowers to reduce temperature while they were watered both mornings and afternoons. In the deep of winter cold, protect camellias and other flowering trunks from frostbite by wrapping. During the rainy season, immediately check if the drainage system is working well, and remove accumulated water in flowerbeds in time to prevent root rot of lotuses and other flowers.

Dynamic monitoring and renewal: when using landscape monitoring, establish the mechanism of regular inspection for flowers growth dynamics. Replace diseased or pest-infested plants and replant within 24 hours of detection. For instance, the same species of flower seedlings can be quickly replanted when the dwarf morning glories in road greenbelts wither to fill the flowering areas.

Hence, the post-maintenance needs to respect the notion of refinement and dynamism. In the very care and seasonal response that they, in more ways than one, embody, urban floral landscapes can spend their life canon beautifying city.

4. Conclusion

In the design and application of garden flowers in urban greening landscapes, the ultimate goal is to better create a suitable urban environment and shape a positive city image. Aesthetic, fit and economy line in practical design and use is a principle that designers should follow. Through sufficient preliminary planning and ecological synergy, it can gradually create a comfortable living environment for urban residents, which is also an important guarantee for the sustainable development of the city.

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