Research on Rural Landscape Design Based on 3R Principle

Yi Shi¹, *, Yilin Wang¹, *, Xiangting Zai², b and Yan Zeng¹, c

¹School of Wanjiang Institute of Technology, Maanshan, China
²School of Changzhou ART Vocational College, Changzhou, China

*Corresponding author e-mail: 447317682@qq.com, *1575458737@qq.com,
*b823184980@qq.com, c214613670@qq.com

Abstract. In recent years, the pace of beautiful countryside construction in China has been accelerating, which has promoted the development of rural tourism industry and is of great significance to the economic development of vast rural areas. While paying attention to economic development, we should also realize the 3R principle, integrate more environmental protection concepts, and realize all-round development in rural areas. Based on the principle of 3R, this paper analyzed the rural landscape design, optimized the traditional design methods, selected more green recyclable materials, and improved the economic benefits of rural landscape design and environmental protection benefits, which provides power for the long-term development of rural areas.

1. Introduction

The all-round rural construction is developed on the basis of village residential areas and agricultural protected areas. The tourism industry in rural areas has also further promoted the development of rural landscape design. With the overall improvement of the material living standards of the masses, many urban residents yearn for the ecological landscape in the countryside, and the upsurge of rural tourism development has ushered in more development opportunities. The rural landscape design is mainly integrated with the rural local characteristic landscape. On the basis of highlighting the original functions of the landscape, the 3R principle concept should be actively integrated to establish a rural landscape in which natural and human elements are integrated with each other.

2. Introduction of Rural Landscape

Rural landscape is the landscape with the characteristics of human and natural elements in rural areas of our country. It mainly includes natural landscape and human landscape. The elements are the results of the hard work of the working people. Natural landscape is the unique geographical features and natural scenery in rural areas. Humanistic landscape is the ideology and belief generated in the background of rural development. Generally speaking, the rural landscape has the following characteristics. First, it is regional spontaneity. The region where the rural landscape is located has prominent randomness and is closely linked with natural and human factors. Most rural landscapes belong to unconscious products and are produced by people in a spontaneous state, and then the second is ecology. In China's rapid social and economic development, people pay more attention to the development and protection of rural natural landscape. In recent years, under the background of all-round development, the landscape in rural areas has begun to change, but many primitive rural
customs are still preserved. In rural areas, traditional productive labor is still the main way of production and life, so many local landscapes have great coordination with the productive labor of human society. Finally, different rural landscapes carry diversified cultural details, so rural landscapes are not only more beautiful scenery, but also unique humanistic feelings [1].

3. Concept of 3R Principle in Rural Landscape Design

In rural landscape design, the application of 3R principle is to give priority to the selection of recyclable, green and pollution-free energy. The combination of existing ecological science and technology can produce greater efficiency, transforming the waste generated in rural landscape design and construction into usable resources. To realize the goals of efficient utilization of energy resources and green zero emission by optimizing the application requirements of original materials, and promoting the establishment of a closed cycle between matter and energy in the transmission. The concept of 3R principle belongs to the ecological design. It not only integrates design and ecological green theory, but also designs and creates more ecological concepts. Through scientific methods, the artificial landscape environment can establish a more perfect concept of resource circulation, which can effectively approach the natural circulation operation mode. In natural rural ecological landscape, the wastes generated in operation should be recycled by nature. Therefore, all kinds of wastes in production and life should be converted into multi-field application resources. This kind of green recycling concept can be used as a brand-new design idea for rural landscape design and can effectively develop and eliminate brand-new design modes. Recyclable resources mainly include wind energy, solar energy, water power, geothermal energy, etc., as well as various resources such as litter, concrete, gravel, etc. generated in landscape construction. Objects that have been used in construction can be converted into articles with technological attributes after conversion, which have long-term vitality and effectiveness, and can be explored and obtained more new uses after their original functions are lost [2].

4. Principles of Rural Landscape Design based on the Concept of 3R Principle

In the design of rural landscape, attention should be paid to the protection of rural landscape. In strengthening the rural landscape and garden design, importance should be attached to preserving the traditional rural landscape culture and protecting the natural environment. For example, in the design process, people should notice the protection of cultivated land resources to prevent greater damage to local river resources, and promote local sustainable development in the design stage. In the principle of openness, we should not pay one-sided attention to the design of rural landscape elements in the design process, and more private landscape designs should be incorporated into the design elements. Through the integration of such elements, the openness and inclusiveness of modernization can be fully highlighted [3]. The human society should be promoted to be closer to nature and display the charm of the landscape. In the rural landscape design, it is necessary to comprehensively analyze the local cultural environment and natural environment, integrate more rural landscapes and highlight the uniqueness of the region. In the construction of rural landscape, we should pay attention to meeting the basic aesthetic requirements of the masses to the greatest extent. It is also necessary to focus on economic and social values, which can realize the harmonious development of human beings and nature and highlight the positive role of garden construction and development. In the process of garden construction, regional folk customs should be protected. In the garden design, more rural landscape should be added to the overall ecological environment. In the design, the echo points between rural landscape design and modern urban garden design should be integrated to analyze its overall design style. Only by combining the overall urban design trend and the characteristics of regional landscape design can more distinctive rural landscapes be designed [4].
5. Rural Landscape Design Path Based on 3R Principle

5.1. Optimizing design and strengthening 3R principle
In the rural landscape design, we should lay emphasis on the overall integration of local natural geographical elements and integrate the original ecological elements into the rural landscape design. In the design, it should be slightly reformed to promote its mutual integration with the architectural structure and realize the harmonious development of landscape and environment. The design and renovation of ponds in rural landscape can supplement various aquatic plants such as lotus flowers, which improves their ornamental value. To create a sense of green landscape experience, the corresponding fish, shrimp, agricultural and sideline products can be appropriately cultured in the pond. The silt in the pond can be used as composting material to optimize the soil environment, embellish the landscape, improve the design economic benefits, and can also be used for recycling resources. In the design of rural landscape, it is necessary to reasonably integrate the existing local architectural features and actively establish landscapes with strong historical and cultural atmosphere, such as integrating rural calligraphy, painting, gardens and other elements, so as to promote the harmonious blending of rural features and rural landscape. In landscape design, regional pavilions, old houses, production sites, etc. should be properly renovated, more labor elements should be added, and an integrated experiential landscape should be established. When tourists go deep into it, they can truly experience the labor process of farming, grinding and so on, and feel the fun of family work [5]. In the renovation of old buildings, the waste of resources caused by direct demolition should be regulated and controlled, the existing building resources should be integrated and applied, and a brand-new rural landscape should be established.

5.2. 3R principle of natural rainwater
In the rural landscape design, more scientific devices should be added to collect rainwater resources, which can be converted into surface runoff or collected through wells, thus effectively realizing the goal of recycling application. In the design and construction of rural landscape, more water landscape should be built, such as common fountains and streams. Adding more decorative lights can effectively enrich the visual impact of landscape design. Water landscape can also be used as a storage facility for natural rainwater resources. Rainwater storage ponds can be built in areas where precipitation is concentrated, filter screens and slopes can be established, and natural rainwater collection can be realized through slope regulation. A filter screen is set at the water outlet, and the rainwater after filtering and cleaning is applied for cleaning operation in daily operation, which can be applied to the 3R principle. In rural landscape design, more green vegetation should be laid to accumulate rainwater to prevent soil erosion. Green vegetation and potted plants can lock in rainwater and adjust the impact of large natural precipitation on landscape construction. It can also purify the air environment around the landscape and reduce noise. In landscape design, vegetables and fruit trees should be appropriately introduced to effectively optimize the natural environment. It can also carry out more recreational activities in the cultivation of vegetable orchards and introduce more people to participate. Deep processing on the basis of cultivated vegetables and fruits and the establishment of a catering culture with rural characteristics can optimize the rural environment and promote the all-round development of the region. In the landscape wetland, the water flow environment and elevation difference environment should be comprehensively analyzed to purify the water source. More nutrients contained in sewage can be absorbed by vegetation and stored in wetland mud layer, which can effectively purify downstream water sources [6].

5.3. Reasonable application of environmental protection materials
Rural areas are rich in natural material resources, such as forage, wood, sand and gravel materials, etc. In rural landscape construction, construction should be based on the existing materials in the area, which can effectively reduce resource consumption, reduce costs and realize the recycling application of multiple resources. For example, in the construction of wall landscape, grass wallpaper, hemp
wallpaper and other materials can be selected. In the landscape design stage, rural stones can also be piled up to form a rare stone landscape. Introduce more water flow to establish rich and colorful waterscape, and highlight rural characteristics through stone carving arts such as stone. In the selection of building materials, local raw materials should be selected as much as possible, which can reduce transportation costs and adjust freight. It makes the local rural landscape fit with the original ecology and develop harmoniously with the natural landscape. Wood can be used as the main building material in the construction of rural landscape courtyard [7]. It is also necessary to build pavilions and rest places, and to build decorations through technological design and processing of local waste forage, waste trees, etc., which can recycle the existing resources. The application of local raw materials can also minimize the production of most wastes and fully meet the development goals of environmental protection and resource conservation.

5.4. Solar energy recycling application

One of the key points of resource utilization is renewable energy with solar energy as the main body. Attention should be paid to the use of solar energy in landscape design. Solar energy modules are established on building walls, roof structures, parking sheds, billboards, open-air desks and chairs, retaining walls, landscape sculptures, etc. The solar module should collect more sunlight and convert it into electric energy, which can be used for landscape applications. The shielding property of photovoltaic materials should be controlled and the distance of photovoltaic components should be controlled. Shadow occlusion is inevitable in the design, and the occlusion problem caused by accidental factors should be controlled. The application of solar energy should also be effectively integrated with landscape creation and space application functions. It can be combined with the color and texture of photovoltaic materials to be used in landscape creation and design.

5.5. Development of folk culture and utilization of biological resources

In the rural landscape design, we should also pay attention to the comprehensive excavation of folk culture, and the abandoned buildings can be renovated in the rural landscape design and construction. We would fully follow the basic principle of adjusting measures to local conditions to build more folk custom experience exhibition halls and comprehensively develop the farming culture and festival culture with local characteristics. The cultural display is matched with folk performances and cultural displays, which is convenient for tourists to feel more cultural folk customs and more tourist experiences on the basis of inheriting culture. Rural areas contain sufficient biological resources, such as chickens, ducks, fish and shrimps, which can be effectively integrated with landscape design through stocking. In the design process, a fish pond with more ornamental value will be established. The fish pond contains more fish schools. Tourists can participate in various leisure and entertainment activities during the tour, watch the pond scenery, and satisfy the harmonious coexistence between human beings and nature.

6. Conclusion

In conclusion, on the basis of the original landscape characteristics and natural landscape, all kinds of wastes should be transformed according to the principle of recycling resources in the rural landscape design. What’s more, we should fully integrate the existing stone, wood and other resources, establish exhibits with regional characteristics on the basis of technological processing, and introduce more environmentally friendly materials, which can effectively realize the goal of green development, design and construction.

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