

Implementation Strategy of Edible Landscape in Farmers' Resettlement Housing Residential Areas

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ABSTRACT

This article aims to analyze the habits, needs, and environmental status of residents in farmers' resettlement housing residential areas through field research, policy analysis, and case studies. It explores in depth the potential of edible landscapes in improving residents' quality of life, enhancing environmental quality, optimizing residential area management, and shaping residential area characteristics. The study reveals that edible landscapes need to consider location selection, element composition, and spatial layout at the design level to meet the actual needs of residents and the management standards of residential areas. At the governance level, this article proposes strategies to establish effective organizational models, improve relevant mechanisms, and actively promote community participation to ensure the long-term sustainable development of edible landscapes and the active participation of residents.

Keywords: *Farmers' resettlement housing residential areas, Edible landscape, Landscape architecture design, Residential area governance.*

1. INTRODUCTION

With multiple reasons such as the reform of China's rural land system, the development of new urbanization, and the demand for employment in industrial development, a large amount of rural land has been requisitioned. The government has concentrated the resettlement of requisitioned farmers through the construction of resettlement housing residential areas, forming farmer resettlement houses. According to the different locations of farmers' resettlement housing residential areas, there are two types of projects: urban centralized resettlement projects and new rural community projects. The research object of this article is urban residential areas. Starting from 2020, in order to improve the environmental quality of urban residential areas, China has begun to promote the renovation of old residential areas. The weak infrastructure, poor environmental hygiene, and chaotic order in resettlement housing residential areas are particularly prominent in old residential areas and urgently need to be improved. The proposal of national policies, such as "Beautiful China", "Ecological Garden City", and

"Healthy Residential Areas", as well as the rapid development of society and the outbreak of the epidemic, has promoted the improvement of public health awareness and the rise of family vegetable gardens. Edible landscapes have gradually received attention and have become a new trend in residential landscape design [1].

2. OVERVIEW OF EDIBLE LANDSCAPES

Edible landscape refers to the comprehensive design of edible plants such as vegetables, fruit trees, medicinal herbs, and other landscape elements using landscape design methods, becoming a landscape place with practical value, aesthetic value, and cultural value. It has multiple connotations such as urban agriculture, ecological landscape, and garden landscape [2].

The earliest edible landscapes can be traced back to medieval Europe, where monasteries integrated vegetable gardens with decorative gardens [3]. Currently, many countries have carried out practical projects and explorations on edible landscapes. The Princess Farm in Germany was

transformed from an abandoned square and uses movable planting methods such as plastic boxes. Citizens bring their own fruit and vegetable seeds for planting, and staff and tourists help with cooking. The Southeast Fuxi residential area of the Vancouver Green Winter Olympics in Canada combines public courtyards, rooftop green spaces, and other small agricultural planting areas to form a systematic three-dimensional "edible landscape" [4]. Todd Modern Town in the UK has edible vegetables and fruits in any open space, and 30 other towns have replicated its model. Similar green communities have also been established in the United States, Japan, and New Zealand. Shanghai Clover Nature School in China is promoting "residential gardens" in Shanghai and integrating a series of natural education. Edible landscapes, as a type of landscape, play a fundamental role in landscape decoration and ecological regulation. Edible plants, as landscape elements, enrich landscape composition and construct more complex and ecological landscape systems, which can meet human material needs, aesthetic pursuits, and spiritual enhancement. It is an urban-rural development model that can create economic, ecological, and social benefits [5]. From the research and practical cases of edible landscapes, it can be summarized that edible landscapes in residential areas have the following characteristics: (1) Edible. Edible plants are important elements of edible landscapes and are effective outputs for residents to participate in edible landscapes. The edible landscapes in residential areas are mostly composed of vegetables and fruits, with vegetables being the most common. Vegetables have a short growing season, significant harvest feedback, and fewer fruit plants, but they have more characteristics of landscape plants, with flowers, leaves, and fruits that can be enjoyed and eaten; (2) Landscape oriented. Edible landscapes have systematicity, visual appeal, and usability. Edible landscapes are not simply green spaces. Like other types of landscapes, they have visual and participatory features. In addition to edible plant green spaces, they also have activity and leisure spaces for residents to use; (3) Societal. Edible landscapes can stimulate interaction between residents and the landscape, as well as activities and exchanges among residents, thereby generating social capital, increasing the activity content of residential areas, forming regional culture, providing educational venues, and enhancing residents' happiness index.

3. ENVIRONMENTAL STATUS OF FARMERS' RESETTLEMENT HOUSING RESIDENTIAL AREAS IN CHINA

The construction of farmers' resettlement housing began in 2006 [6]. The residents in the residential area are landless farmers with a large age range. After the land is requisitioned, they mainly work as temporary workers, so they can spend a longer time in the residential area [7]. Due to funding and management issues, the existing farmer' resettlement housing residential areas have a single landscape form, limited activity space, insufficient green space, and low green space quality. Some residents are cultivating and planting on the open spaces at the edge of residential areas and the green spaces inside, occupying public activity spaces or transportation spaces [8]. The management measures of the government and residential area management departments strictly prohibiting vegetable planting and the persistent behavior of residents have not been completely eliminated, resulting in farmers' resettlement housing residential areas often presenting themselves as "dirty, messy, and poor". The reasons for the phenomenon of unauthorized vegetable planting mentioned above are: (1) the livelihood source of displaced farmers is not stable, and planting vegetables nearby can partially alleviate economic pressure; (2) After entering urban residential areas, residents cannot fully integrate with urban life and still maintain their original rural production and living habits; (3) Residents believe that the vegetables they grow are healthier and provide leisure and relaxation.

4. THE SIGNIFICANCE OF EDIBLE LANDSCAPE CONSTRUCTION IN FARMERS' RESETTLEMENT HOUSING RESIDENTIAL AREAS

According to research, there are many spontaneous vegetable planting behaviors in the existing farmer resettlement housing residential areas, which are far from the functionality and effectiveness of edible landscapes due to the lack of design and management. The construction of edible landscapes in farmers' resettlement housing residential areas is of great significance, as it is a combination of residents' needs and the advantages of edible landscapes.

4.1 Meeting the Needs of Residents in Farmers' Resettlement Housing Residential Areas

Edible landscapes can meet the needs of residents for their attachment to land and rural life. From the perspective of respect and understanding, we can understand residents' attitudes towards residential areas and urban life, protect their behavior in the most reasonable way, and promote the development of agricultural production landscapes in urban areas [8]. From another perspective, the contradiction between residential area managers and residents is the balance between urban residential area regulations and residents' behavioral habits. Legalizing the edible landscape in resettlement housing residential areas is the most appropriate humanistic care for residents in farmers' resettlement housing residential areas, reducing the pressure on residential area managers, easing the conflict between residents and managers, and thus reducing the burden on the government.

4.2 Relieving the Problem of Tight Funding for the Construction and Management of Farmers' Resettlement Housing Residential Areas

Due to budget constraints, the construction of resettlement houses for farmers usually simplifies landscape design, only meeting the minimum standards for urban ornamental landscapes, resulting in unsatisfactory visual perception and user experience. The creation of edible landscapes can create visually beautiful, functionally diverse,

and interactive spaces that meet the standards of urban residential landscape. Meanwhile, due to the active participation of residents, the maintenance costs of public green spaces in residential areas have been reduced.

4.3 Creating Distinctive Urban Residential Landscapes

The traditional labor habits of residents in farmers' resettlement housing residential areas have become deeply rooted, and edible landscapes have a wide acceptance in residential areas. By leveraging their advantages, they can become a positive part of urban development. Reasonable design and management of edible landscapes can create distinctive public green spaces in urban residential areas, while residents can obtain food, reduce the cost of living in urban areas, and promote social stability and urban-rural integration construction.

5. SUSTAINABLE IMPLEMENTATION STRATEGIES FOR EDIBLE LANDSCAPES IN FARMERS' RESETTLEMENT HOUSING RESIDENTIAL AREAS

In the renovation and construction of farmers' resettlement housing residential areas, edible landscape construction needs to be carried out at two levels, namely "design" and "governance", in order to enter the track of sustainable development. ("Figure 1")

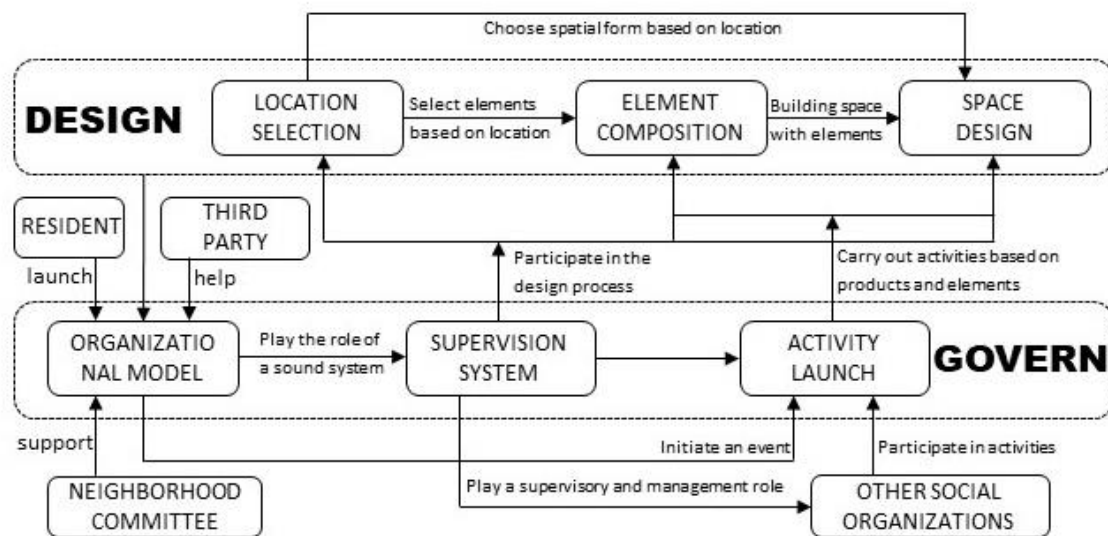


Figure 1 Implementation strategy map of edible landscape.

5.1 Design Level

5.1.1 Location Selection

Residents in farmers' resettlement housing residential areas have the characteristics of aging population and low integration into urban life. The smaller travel distance provides convenience for the elderly to participate in edible landscapes and increases residents' participation. Edible landscapes should prioritize idle land near the central landscape area, as their centralized layout has strong agglomeration and is conducive to increasing residents' attention and participation in edible landscapes.

In addition to plant cultivation and management, rest and interaction are also important aspects of edible landscapes. Many farmers' resettlement housing residential areas have storage rooms on the first floor, which are often used by residents as kitchens or living rooms in addition to storage functions. The outdoor space connected to the storage room has become one of the most preferred gathering areas for residents. The location of edible landscapes can be considered between building clusters, making it convenient for residents to reach and fully utilizing the already formed social gathering space as a resting place.

To increase the planting area and activate negative spaces in residential areas, edible landscapes can also be selected in the following areas: illegally occupied land and idle spaces in residential areas, difficult to clean corner plots, dirty and messy hygiene blind spots, accessible idle bicycle sheds and residential roofs, etc. Transforming these gray areas into vibrant and edible landscapes is of great significance for improving the environmental quality of residential areas and enhancing neighborhood interaction.

5.1.2 Element Composition

The edible landscape of farmers' resettlement housing residential areas generally includes the following components: planting sites, roads, rest areas and auxiliary facilities, as well as night lighting.

The planting site for edible landscapes can be an independent green space or jointly built with surrounding green spaces, but due to its special nature and the need for daily management, it requires clear boundaries. During construction, it is necessary to fully consider the management of

edible landscapes, lay roads with reasonable width and anti-slip surface layer, and facilitate the planting, maintenance, and harvesting of edible plants. A certain area of rest space needs to be set up around the planting site, accompanied by rest chairs. Considering that residents in the resettlement housing areas are gradually integrating into the daily life pattern of urban areas, night lighting can ensure that residents can also engage in edible landscape planting activities at night. It is necessary to ensure that the lighting covers the entire planting area and is evenly distributed.

5.1.3 Space Design

According to the characteristics of edible landscapes, the spatial design of edible landscapes needs to be systematically considered to meet the planting requirements of edible plants, emphasize the visual aspect of the landscape, and value the participatory nature of the landscape. The first is to determine the usable area range. The second is to establish the zoning configuration and flow arrangement of edible landscapes, and create a landscape atmosphere through simple garden ornaments and basic facilities. The overall design needs to be considered in conjunction with the design of public spaces and synchronized with the construction or renewal of residential areas.

The spatial design of edible landscapes in farmers' resettlement housing residential areas should have the characteristics of productive agriculture, that is, clear boundaries. Therefore, regular, organized, and systematic planting methods are more popular and convenient for residents to manage. Creating a well-organized planting pattern includes establishing a regular spatial structure and establishing a regular crop morphology. According to geometric rules, the spatial structure of edible landscapes is set, and common geometric spatial structures include square combination, centralized, and radial. The square grid format is the most common way, usually consisting of repeated arrangements of square planting boxes or plots of the same form, forming a unified spatial order for edible landscapes under the control of the grid. Meanwhile, regular planting beds facilitate the division of site ownership and management. The disordered crop morphology will greatly reduce the aesthetic appeal of edible landscapes, so establishing a regular crop morphology is extremely important. On the one hand, growers can negotiate to adopt a unified and orderly planting method for cultivating edible plants. On the other

hand, they can maintain the appearance of edible landscapes by using unified vertical planting racks and other agricultural facilities. At the same time, attention should be paid to the design of roads at the edge of the planting area, appropriately increasing the hard ground area and selecting suitable hard ground materials to enhance the reception efficiency of hard materials in the field of view.

To increase the aesthetic appeal of edible landscapes, a certain proportion of ornamental landscapes should be reasonably configured in edible landscapes to create pleasant rural scenery. In addition, as ornamental flowers and trees can attract beneficial insects and birds, configuring appropriate ornamental landscapes can also help control plant pests and assist in crop pollination. The simplest and most feasible landscape configuration strategy is to plant a small number of flowers and trees around the planting site, or to set up green fences with climbing ornamental plants, in order to achieve rich landscape effects without occupying the planting land.

5.2 Governance Level

After selecting the planting area, the edible landscape of the farmers' resettlement housing residential area is recognized in a way that is acceptable to the residents. Generally, it is divided into sections through application. If the land is limited, it can also be planted alternately according to the design land according to the application.

5.2.1 Building a Basic Organizational Model

The construction and management of edible landscapes in farmers' resettlement housing residential areas require a diversified collaborative model of "resident initiation+ government organization+ third-party institutional support+ resident autonomy" to ensure their sustainable development [9]. This mode includes the following key stages: (1) Start-up stage. Initiated by residents, the neighborhood committee is responsible for organizing, establishing a management committee, electing responsible persons, and carrying out publicity work. Third party organizations provide coordination and assistance during this stage; (2) Participatory design phase. The property management and owners' committee coordinate the design work and organize professional or volunteer teams to provide technical guidance. Residents

participate in design discussions to ensure that the design plan reflects residents' wishes while balancing the interests of all parties. Consensus on the plan will promote communication among multiple parties; (3) Construction phase. The management committee will simplify the engineering tasks to enable residents to participate in the construction process, such as transferring materials, building boundaries, wall painting, etc., in order to enhance residents' cohesion and social capital; (4) Management and usage phase. The neighborhood committee and residents jointly formulate management systems, divide and claim land parcels, and owners can decide to plant crops on their own. At the same time, a volunteer team composed of agricultural technicians, managers, and event planners will be formed to be responsible for daily maintenance and organizing related activities.

5.2.2 Establishing a Sound Management and Supervision System

A sound management and supervision system is an important guarantee for the sustainable development of edible landscapes [10]. To this end, it is necessary to establish a management committee for edible landscapes in residential areas, organize the preparation of relevant policy documents, review and evaluate the planning schemes for edible landscapes in residential areas, and establish development plans. Effective disclosure of management systems and rules, clarifying the responsibilities of different participants, reducing potential disagreements and conflicts among participants, and stimulating residents' initiative in self-management. Generally, the following procedures should be followed: after receiving the notice of the zoning of edible landscape land in the residential area, the applicant shall submit a written application to the management committee. The management committee shall comprehensively consider the received application and the conditions of the residents' residence, reasonably divide it, notify the applicant residents, and sign a claim letter. The applicant voluntarily organizes an edible landscape autonomous team and participates in the management of edible landscapes in residential areas. The management rules should include rules for planting behavior and planting methods, rules for infrastructure use, environmental hygiene rules, rules for encouraging and prohibiting activities, etc.

5.2.3 Carrying out Activities in Residential Areas

The rich folk customs in China provide a foundation for diversified activities in farmers' resettlement housing residential areas. With the help of edible plants, residents can independently or jointly organize activities with enterprises, social organizations, and universities, thereby expanding the social impact of edible landscapes.

The output of edible plants is the core material of activities, which can be used for picking, pastry making, flower tea and nectar extraction. In addition, the growth process of plants is a carrier of natural education, suitable for conducting parent-child, planting competitions, and science popularization activities. The flowers, fruits, and leaves of edible plants can be used for handmade artistic creation, the leaves can be used for painting or dyeing, and the flowers can be used for decal creation. During festivals, edible plants can also be incorporated into folk activities to enhance the cultural significance of the community.

Through these activities, residents can establish connections with edible plants on multiple levels such as thinking, emotions, and actions, forming a harmonious atmosphere of "food for neighbors". Featured activities can not only enhance the reputation of residential areas, but also accelerate residents' integration into urban areas, enhance their sense of identity as urban residents, and ensure the sustainable development of edible landscapes.

6. CONCLUSION

Edible landscapes play an important role in the landscape renewal of farmers' resettlement housing residential areas, improving residents' quality of life, promoting community integration, and enhancing environmental quality. In the future development, the promotion of edible landscapes requires the establishment of regulatory systems to provide legal protection and safeguard residents' rights and interests. This will enhance society's recognition of edible landscapes, while providing necessary financial assistance for related projects through policy incentives and financial support, which will contribute to their long-term sustainable development. Meanwhile, innovative technological products can support the development of edible landscapes. Modular edible landscape is a new design concept, where modules are designed by professional designers according to the requirements of the demand side, and can be

assembled and spliced to achieve predetermined effects and functions [11]. Vertical greening products, such as wall vegetable planting bags, can optimize space utilization and provide residents with a new way to get close to nature. The application of innovative technological products will promote the enhancement of ecological value and sustainable development in residential areas.

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