

## Article

# Sustainable Landscapes in the Traditional Korean Residential Environment: Focus on the Joseon Dynasty

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**Abstract:** This study examines the sustainable landscapes displayed in traditional Korean houses of the Joseon Dynasty (1392–1910) by investigating urban agricultural practices implemented in the palace, private houses, and an imaginary garden (Uiwon). Currently popular productive gardening applications, such as urban agriculture, productive landscapes, and edible landscapes, also formed the backbone of the traditional Korean housing environment in the Joseon Dynasty, which has had substantial implications for today's landscaping practices. Landscapes that are productive rather than decorative are important for environmentally sound and sustainable development not only for South Korea but also for modern housing design worldwide. This research provides concrete discussions of the definition and range of urban agriculture, agricultural methods, and principal agents of gardening-related businesses. This information advances the cultural conversation as well as the understanding and application of gardening in the modern context. Through a comparison of traditional and modern South Korean housing environments, this study contributes to developing the research on the role of gardens in sustainable landscapes.

**Keywords:** imaginary garden (Uiwon); urban agriculture; productive landscapes; edible landscapes; ESSD (environmentally sound and sustainable development)



**Citation:** Kim, H.-S.; Kim, K.-W. Sustainable Landscapes in the Traditional Korean Residential Environment: Focus on the Joseon Dynasty. *Land* **2021**, *10*, 690. <https://doi.org/10.3390/land10070690>

Academic Editor: Michael U. Hensel

Received: 13 May 2021  
Accepted: 29 June 2021  
Published: 30 June 2021

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## 1. Introduction

### 1.1. Background and Purpose of the Study

The cultivation of gardens filled with edible plants has been a universal phenomenon in human society in the East and West. Depictions and examples of edible plant cultivation have appeared throughout history, in such places as an ancient Egyptian mural with a grapevine (as shown in the world's oldest garden painting, the Egyptian garden was created not just for splendor but also for practical purposes, such as producing wine, fruit, vegetables, and papyrus [1]), the well-documented Roman villa gardens, the abundance of medieval monastery gardens, and the garden depicted in the work "King's vegetable garden (Le Potager du Roi)" displayed at the 17th-century Palace of Versailles. These historical examples show that vegetable gardens have been and still are universal all over the world.

Productive landscaping enhances many aspects of life; for example, landscaping that includes food production has historically been a part of human residential life [1] and contributes to maintaining a sustainable environment. As productive—rather than merely visually appealing—gardens are highlighted by recent global trends, the productive landscape, which focuses on urban agriculture, is becoming a hot topic. The increased popularity of productive landscapes has also highlighted and promoted local food industries. Productive residential landscapes of the past also contributed to maintaining ecologically sustainable agricultural environments, such as through the management of livestock excrement and food waste [2–5].

In light of modern landscaping, productive landscaping that produces food by cultivating vegetable gardens in and around private residences can be a vital part of a sustainable

environment that can be shared with future generations. Productive landscaping near residential areas also provides social benefits, such as supporting community culture recovery, accommodating leisure activities, and providing stress relief [6,7]. They also have economic benefits in that they help lay the foundation for a green economy and promote health by providing healthy foods and encouraging physical activity [8–10]. Furthermore, productive landscaping includes positive environmental and ecological aspects [2–5], providing urban ecosystem recovery, green space expansion, urban heat islands, and warming mitigation.

Local governments, countries, and global organizations are promoting the urban agriculture trend through policy. The United Nations, which recognizes the many advantages of urban agriculture, recommends agriculture for metropolitan urban planning and regards it as an essential component in creating a more ecological urban environment [11–14]. In keeping with this trend, in the 1990s, South Korea agreed that it was necessary to introduce urban agriculture, and laws to this effect were formalized in the 2000s [15]. This movement started in the public spaces within cities, but the ultimate goal is to expand it into residential areas. Urban agriculture, which was a common sight just half a century ago when people regularly grew vegetables in their yards, has recently gained renewed popularity in South Korea. However, as urbanization progresses and apartment houses increase, apartment gardens are also becoming visual art [16–19]. In residential landscaping, it is important to create an environmentally sustainable space without chasing fashion.

This study raises a question about whether the trend of apartment gardens representing South Korean housing becoming decorative and luxurious is correct and desirable. Of course, this question does not imply that decorative, luxurious gardens are “wrong.” However, it is necessary to consider how the lavish landscaping that deviates from the primary residential purpose will benefit the residential environment. Landscaping should not be merely fancy and decorative but should be created according to the purpose and character of the place. A question arises as to whether the residential environment is a place that requires gorgeous landscaping. In the case of South Korea, productive landscaping has long been carried out in residential areas. Examining the use of productive landscaping in the Joseon Dynasty (1392–1910), a traditional society, may have implications and lessons applicable to the current situation in which urban agriculture is becoming common. The agricultural philosophy of the Joseon Dynasty Palace was hundreds of years ahead of the current global trends reflected in the modern White House kitchen garden. The Cheongwadae (South Korean presidential residence), comparable to the Joseon Dynasty Palace, had a “green garden” where outdoor events were held; the garden was composed of commemorative trees, herbaceous flowers, and various grasses. It is regrettable that the Cheongwadae, located in the Gyeongbokgung Palace area, did not inherit the palace tradition of the Joseon Dynasty.

This study reveals how a sustainable landscape—which can provide a variety of environmental, social, and economic benefits—was built in traditional Korean houses by examining the palace (the king’s residential space), a private house, and an imaginary garden as envisioned by Joseon Dynasty scholars. Especially in the case of imaginary gardens, the concept was sublimated and applied to sustainable life. The reason for examining the concept by looking at a palace where the king, who is the most powerful person in the country, resides, and a private house, where the upper class and commoners reside, is to examine the influence of class and economic power on the creation of a garden in a residential environment. The addition of an imaginary garden is used to emphasize the pursuit of productive landscaping without pursuing splendor even in the residential environment created in the imagination.

The study also looks at the current situation and modern South Korean garden culture in relation to global trends such as urban agriculture (productive landscape). From the viewpoint of sustainability, this could be an opportunity to inherit and develop garden culture by comparing the traditional Korean housing environment with the modern housing environment. This study contributes to the study of the role of the garden in the traditional Korean residential environment, and it can also contribute to the application of the modern

house garden. The examination may be applicable not only in South Korea but may also have value for places around the world.

### 1.2. Methods

This study was organized as follows. First, the sustainable landscape that appears in the traditional residential environment of Korea was examined. The traditional residential environment was divided into palaces, private houses, and the imaginary garden. Palaces and private houses were divided to analyze how productive landscapes appear according to social status and economic power. For this purpose, old literature and paintings were used and analyzed. However, the imaginary garden was analyzed by focusing on the old literature to discover how a productive garden was conceived in a garden without the limitations of status and economic power. The reason for analyzing the past residential environment is to find a clue to apply it to modern residential environment by emphasizing that sustainable landscaping is not limited to modern society through comparison with the modern residential environment. Second, the residential environment of modern South Korea was analyzed on the sustainable landscape shown in the traditional residential environment. In this chapter, the background and current status of productive landscaping (urban agriculture) in South Korea and its limitations are discussed. In addition, it is pointed out that productive landscaping is not being done in the residential environment of modern South Korea and emphasized that productive landscaping has already been done in the past. Based on this, it was attempted to offer suggestions on what directions gardens should take in modern residential areas.

## 2. Discussion on the Productivity (Practicality) of the Traditional Korean Garden

Gardening is an activity associated with everyday domestic tasks, but it also provides a way to discover the truths of the universe by observing the changes in nature that one experiences by cultivating edible plants. Francis Bacon praised gardening as the purest of pleasures that humans pursue, providing the greatest consolation to the human soul [20]. Jacques Benoit-Mechin [21] said that creating a garden using the elements of nature is the best expression of leisure and a source of happiness. Such interpretations are shared by the East and the West and are emphasized to encourage spiritual meditation, which lies beyond simple sensory pleasures realized through enjoying a natural garden environment.

On the other hand, the productive (practical) value of a garden cannot be overlooked; however, the available research and interest in practicality are insufficient. The Western theory of practical gardening focuses on the historical flow and definition of the concept of practicality [22,23], as well as on the design of each garden [24–26]. In South Korea, the theory of practical gardening has introduced examples from Japan and Europe and mentioned the necessity of creating a housing environment. Research on the practicality of the garden is still in the early stages. Research on the traditional Korean garden has focused mainly on the natural environment, location, and the purpose and layout of the garden. The concept of a traditional Korean garden was established academically in the 1980s, although content regarding the practicality of the garden was rarely included in early studies [27–29]. The abstract factors of thought, aesthetics, and so on are still the focus of the traditional Korean gardens.

Urban agriculture in productive landscapes is emerging as a relevant subject in correlation with the social mood in South Korea, but gardening is still being approached as a leisure activity; there is no concrete discussion on the definition or range of urban agriculture, agricultural methods, or the principal agents of the business. Systematic research on, and interest in, the practical garden as representative of urban agriculture is insufficient. Accordingly, the fact that productive landscapes have been realized in traditional residential environments can be a starting point for discussing practical gardens. Discussion on the practicality of a garden will be worth sharing with the world beyond South Korea. The point that distinguishes this study from the existing research on traditional Korean

gardens is the intent: to find relevant ways to develop and pass on the practical aspects of the traditional Korean housing environment for use in the modern era.

### 3. The Sustainable Garden of the Residential Area of Korea's Joseon Dynasty

#### 3.1. The Sustainable Garden of the Palace: The Residential Environment of the King

The palace space united the highest level of technology, culture, and thought. Based on historical records, the Korean palaces (Gyeongbokgung Palace, Changdeokgung Palace, and Changgyeonggung Palace) of the Joseon Dynasty had sustainable gardens, such as cultivated farmlands and orchards, and avoided traditional, lavish decoration in the palace compound [30].

The palace was divided into the inner palace zone and the rear garden zone. The inner palace zone was a space where different varieties of architecture converged, and the rear garden zone was composed of a natural garden. The rear garden zone is generally interpreted as a recreation and relaxation space. However, the palace garden was a multi-functional space with many useful elements. It was used as a sustainable garden and was not lavishly adorned or developed as an ornamental garden.

The rice paddy and field within the palace were very important symbolic spaces in the Joseon Dynasty because agriculture formed the basis of the economy. The king implemented a policy that encouraged farming and predicted each farming seasons' outcome within the palace. The king and public officials managed this farmland to understand the life of the common people in relation to state affairs. The farmland was created by King Sejong (r. 1418–1450), to test agricultural methods, and the paddy field and mulberry field were created by King Seongjong (r. 1469–1494), which were managed from the beginning of the Joseon Dynasty until just before the Japanese colonial period (1910–45) [31,32]. The Donggwoldo painting (which depicts realistic expressions from a bird's-eye view of the palace, hills, ridges, trees, walls, and buildings, with each building bearing a name, making the painting worthwhile as historical material), representing the Changdeokgung Palace (world heritage) and the Changgyeonggung Palace during the Joseon Dynasty, shows rice paddies within the palace grounds (see Figure 1).



**Figure 1.** Paddy fields inside the palace displayed in the Donggwoldo painting, 1828–1830. Ink and colors on silk, 584 cm × 273 cm. Korea University Museum, Seoul.

Changdeokgung, a palace that appears in Donggwoldo, is the palace that the kings of the Joseon Dynasty used for the longest time. Built in 1405, this palace has a garden area of 300,000 square meters out of a total area of 405,636 square meters [33]. The space around Changdeokgung Palace has architecture in the front and an extensive garden in the back that includes the mountains. Changdeokgung Palace is located at the foot of a mountain, so there is almost no flat topography. Under these topographical conditions, if large-scale



palace buildings are concentrated and constructed, the destruction of nature will inevitably follow. However, Changdeokgung was built around the scattered topography to minimize natural destruction. In this way, the palace buildings are located within the natural setting, so the area outside the buildings become natural gardens. Recognized as a palace in harmony with nature, it was registered as a World Heritage Site. In addition, productive landscaping was employed by using the empty spaces to provide food self-sufficiency and farming experience.

The painting's composition shows 11 rice paddies, a water supply channel and reservoir, lush deciduous trees for relaxation, and buildings for farm workers [31]. It appears that decorative landscapes were not employed; rather, the particular landscape features were established for the productive purpose of agriculture. The creation of a separate space in the palace for functional and productive purposes implies that the palace placed more importance on agriculture, which was fundamental to the country's economy, and less importance on creating an authoritative and decorative space.

In addition to the rice paddy, the vegetable garden and orchard in the rear garden of the palace were managed for people residing in the palace [31]. The palace's farmland formed the greater part of the land, as this was the foundation of the country's economy, while the vegetable garden was managed by the eunuchs and the maids-of-honor to maintain self-sufficiency in providing food for the palace residents [31]. There were so many vegetable gardens within the palace at that time that a controversy arose over downsizing the number of gardens because of the inconvenience of night soil fertilizer. The following record is from The Jungjong sillok (Annals of King Jungjong, 14th day of the 3rd lunar month, 1514):

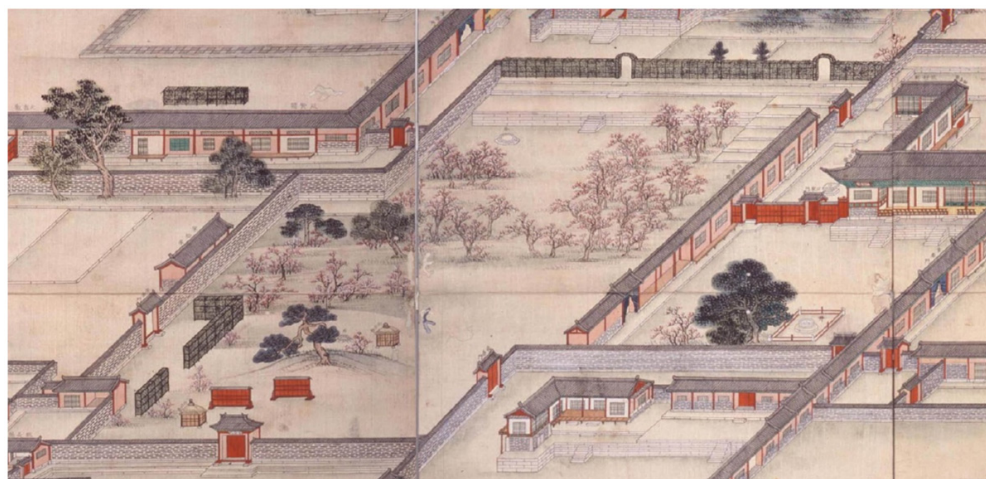
Kim Eung-gi said, "We gather night soil in close proximity to Munsojeon building and plant vegetables or make the vacant land in the palace into farmland, this is what has been constructed where the palace was empty in the past. The palace grounds of China are covered with bricks, and even if there is a small vacant land, they cannot create farmland, as it is more unjust near the area for the ancestral rites. So please let it be prohibited completely" [34] ([http://sillok.history.go.kr/id/kka\\_10903014\\_001](http://sillok.history.go.kr/id/kka_10903014_001) (accessed on 17 April 2021)). (Author's translation)

Although the above record mentions the controversial vegetable garden, the king decided to maintain this garden in the palace, and the continued existence of the Joseon Palace garden, which cultivated productive crops by creating farms on vacant land, was confirmed.

A considerable part of the empty palace where the king did not reside was used for the vegetable garden, reflecting one aspect of productive landscapes found in the palace. The fields around the empty palace, where the king did not reside, could be endlessly extended, and there were many reclaimed fields in the gardens surrounding each building, demonstrating the habit of the people at that time to plant practical crops in a vegetable garden, even if there was only a small amount of land available [31].

The presence of a fruit orchard inside the palace was also confirmed (see Figure 2), along with what resembles fruit trees planted on the vacant land of the palace grounds. Two thatched buildings to protect harvested fruit are shown in the vicinity. The following record from the Injong sillok (Annals of King Injong, 4th day of the 5th lunar month, 1545) shows that they were strictly managed within the palace:

I'm waiting for the various fruits in the rear garden to ripen to use them for ancestral rites, and I am worried that the fruits may be damaged because of the activities of the servants during the festival. So, let Byeongjo (Ministry of National Defense) and Uigeumbu (Supreme Prosecutor's Office) supervise [35] ([http://sillok.history.go.kr/id/kla\\_10105004\\_001](http://sillok.history.go.kr/id/kla_10105004_001) (accessed on 17 April 2021)). (Author's translation)



**Figure 2.** The palace orchard as seen in Donggwoldo painting, 1828–1830. Ink and colors on silk, 584 cm × 273 cm. Korea University Museum, Seoul.

The purpose of cultivating a vegetable garden in the palace was to produce food for the palace residents, while fruit harvested from the orchard was intended to be presented to the king or used for banquets and ancestral rites. For this reason, the orchard was rigorously controlled by the king's command. Additionally, records show that the palace orchard was so small that additional orchards were created in other places, such as in the empty palace. The records also show that productive landscapes within the palace were not limited to a specific area and existed throughout the palace gardens. The following record is from the *Sejong sillok* (Annals of King Sejong, 9th day of the 12th lunar month, 1428):

In the orchard in Seoul, since we use only a small part of the land west of Chandeokgung Palace, various fruits are not cultivated widely and are not enough to fulfill the demand of the country, so please let them be planted at Yeonhuigung Palace, Jangsaengjeon building, Yeonhwawon garden, etc. [36] ([http://sillok.history.go.kr/id/kda\\_11012009\\_006](http://sillok.history.go.kr/id/kda_11012009_006) (accessed on 17 April 2021)). (Author's translation)

A notable characteristic of agricultural policy in the Joseon Palace was that the paddy belonged to the country and was operated from Hanyang (Seoul), while farming by the general population was prohibited. The national farmland operated in the palace and by Hanyang, including agricultural rituals directly conducted by the king, was part of a policy that encouraged agricultural development and served as urban agriculture. This area may be identified as a multifunctional, complex, urban, and green area system that performs the functions of providing feng-shui and opportunities for education, agricultural experimentation, etc. The palace of the Joseon Dynasty period was the residential area of the highest political authority; however, it did not merely represent authority or splendor but also represented sustainability in the production of food necessary for life.

### 3.2. *The Sustainable Garden of the Private House: The Residential Environment of the Common People*

In Korea, especially during the Joseon Dynasty, ideological influences on architecture and landscaping played a major role. They were influenced by the Confucian ideology that emphasized nature worship, which respected nature, ancestor worship, gender separation, preferential treatment for the elderly, and social order. In the private houses of the Joseon Dynasty, the spatial composition and scale of housing were determined by various influences, such as the natural environment, religion, ideology, politics, and the social system, and gardens were created accordingly [37]. As houses were usually built near mountains, nature became the backdrop. Building a dwelling near a mountain has several advantages. If the mountain surrounds the dwelling, it blocks the cold wind in winter, and the artificial

landscape can be minimized because of the natural scenery of the mountain [19,27–29]. The residence is located in a place where you can have a garden where you can feel the change of the four seasons. This residential location is closely related to feng-shui, and it is a place that satisfies the basic principle of feng-shui, “blocking the wind and obtaining water” [27–29,31–33].

The living space within the rear garden was divided into men’s, women’s, children’s, and servants’ living spaces [19,31–33]. This spatial structure can be seen in the houses of the Joseon Dynasty that remain today. The Joseon Dynasty was a class-based society, and there was discrimination between men and women. Due to this social atmosphere, residential spaces were strictly classified according to status and gender. Each home had several yards, as space was divided according to status, position, gender, and use, and it was standard that each building had its own garden. Unlike modern houses (those built after industrialization began in the 1970s), the traditional Korean house was divided according to its use and characteristics. Gardens within modern houses have limited practical use, but the Joseon Dynasty gardens had versatile functions, accommodating various activities such as community gardening and events such as weddings, funerals, and feasts [19,31–33]. The garden was a space for house chores and events and a practical multifunctional space in which to grow vegetables, fruits, and herbs, as well as functioning to connect different spaces and buildings. Figure 3 shows the sustainable residential environment of Kim Jo-sun (1765–1832), the father-in-law of King Sunjo (r. 1800–1834), and a power elite in the late Joseon Dynasty. It was an upper-class residential area, but it had a sustainable residential environment rather than a flashy space and included features such as versatile vacant land, an orchard, a vegetable garden, an irrigation ditch, and a pond.



**Figure 3.** Sustainable elements of the outer space of a private house shown in Okhojeongdo painting, 1815. Ink and colors on paper, 193 cm × 150 cm. National Museum of Korea, Seoul. (1) yard (multifunctional vacant land), (2) orchard, (3) vegetable garden, (4) waterway, pond.

The traditional Korean housing environment, with the influence of the beautiful natural landscape, often had lovely features that did not require the adornment of an artificial garden. Therefore, the focus was on growing vegetables, fruit trees, and herbs necessary for daily life [31–33]. This residential environment was common for the upper



class, which pursued sustainable living while emphasizing Confucian ideals [31–33] and traditional ethics within the residential space. The residential environment of the Joseon Dynasty began to morph into Japanese style during 36 years of Japanese colonial rule (1910–1945). Then, as industrialization began in the 1970s, the traditional housing culture disappeared due to the spread of modern housing. Nevertheless, examples of traditional dwellings with productive landscapes from the Joseon Dynasty, such as vegetable gardens and orchards, remain across the country.

In contrast, common people's houses did not contain several spaces in the form of a garden connected to one building, and they lacked thoughtful and ideological aspects. Unlike the houses of the upper class, spaces were not divided according to their function but were used for practical multifunctional purposes [31–33]. Because of financial and social limitations, commoners could not grow ornamental gardens; therefore, they utilized empty space by growing vegetable gardens.

In addition, the nation encouraged people to grow productive plants, and the Joseon Dynasty code specifically encouraged private homes to plant mulberry trees for producing cloth. The following record shows that the quantity was specified according to the size of the house.

Gyeonggukdaejeon (The Grand Rule of Laws in Joseon Dynasty): It is recommended to plant mulberry trees in private houses, as many as 300 trees in big houses, 200 trees in medium-sized houses, and 100 trees in small houses; the local governors will oversee the growing of mulberry trees, and it is forbidden to unnecessarily cut mulberry trees without owners [38] (p. 36). (Author's translation)

A private house differed from the palace only in size. Productive landscapes for producing vegetables, fruits, and herbs were developed according to the residents' economic condition. A private garden was a small space for daily activities, but from a modern point of view, it was a sustainable, environmentally friendly, practical garden. As people began to consider using ponds to irrigate and cultivate the fields, a philosophy emerged that practically utilized the elements of nature in the garden [31–33].

### 3.3. Sustainability in the Imaginary Garden (Uiwon): The Residential Environment Desired by Joseon Dynasty Scholars

The Uiwon is an imaginary garden with a five-dimensional design reflecting meaning and thought beyond the four dimensions by reflecting time. The Uiwon reflects urban scholars' ideas regarding gardens in the late Joseon Dynasty. Setting up an imaginary garden was a cultural phenomenon that encouraged dreams and provided a kind of entertainment for the scholars in Hanyang (Seoul) and its surroundings. Sung (2015) introduced in detail the imaginary garden popular among the scholars of the Joseon Dynasty from the viewpoint of landscape history [39], showing that the scholars of the Joseon Dynasty pursued a simple and sustainable garden, not a splendid or ideal garden; despite that, they designed gardens in their imagination and had no economic constraints.

The imaginary garden was popular among scholars of the 18th and 19th centuries, a period when the population of Hanyang rapidly increased with the development of commerce and economy during the late Joseon Dynasty. In the writings of intellectuals in the metropolitan area of the late Joseon Dynasty, the contents related to architecture and landscaping increased, and they expressed the desire to own houses and gardens. The intellectuals expressed the desire realistically through "depicting the imaginary garden (Uiwonji) in writing." The writings on the imaginary garden show the scholars' views on residential life at the time; therefore, they are important historical documents that should be examined [40].

Although the imaginary garden appeared from the 15th century in several forms, such as poems, essays, and pictures [39], it began to change in the 18th century. Where the imaginary garden before the 18th century expressed utopia beyond reality, the imaginary garden after the 18th century showed a longing for a relaxed rural life among scholars, who could not leave the complex life of cities.



In Hanyang, during the late Joseon Dynasty (18th c.), the concentration of political, economic, and cultural power increased, the disparity between the rich and poor widened, and there was a shortage of housing and land [40]. Under these circumstances, scholars were drawn to the advantages of urban life and moved into cities. During the latter part of the Joseon Dynasty period, the attitude toward life, hidden in the consciousness of a scholar, was to live in seclusion in the countryside and reside in a place of natural beauty. While the ideology of this goal remained, the reality was being lost. However, given a complex city life, citizens' desire for rural life was exaggerated, which led to the creation of an urban garden in Hanyang. Scholars who did not reside in these social environments left numerous records about the garden of their imagination [41], and Yu Gyeong-jong (1714–1784), in the late Joseon Dynasty, stated the motivation for creating an imaginary garden.

Uiwonji (Records of Imaginary Garden), written by Yu Gyeong-jong: The imaginary garden is a garden decorated in the mind. Is it possible to decorate it in the mind first, without making a garden? When drawing it in my mind, the garden immediately appears before my eyes, clearly, bit by bit. Just because a person owns a garden does not mean the person has a garden in mind. In contrast, even if a person does not own a garden, this does not mean the person does not have a garden in mind. There is a problem in both cases. Those who have no garden but dream it in their mind are better off than those who have a garden, but who have no garden in mind. However, arguing such a thing is pointless. When people are born, do they not just borrow a place to live for a while? Still, is it necessary to distinguish the real from the imaginary? [40] (p. 124). (Author's translation)

The imaginary garden helped individuals attain vicarious satisfaction by creating a virtual space and garden. Records related to imaginary gardens are described in enough detail to be reproduced in modern times. The following writings show that the imaginary gardens conceived by Joseon scholars were not seeking utopia, but rather a sustainable space or a farm.

Uiwonji (Records of Imaginary Garden), written by Yu Gyeong-jong: The garden is on the ground level, a few meters wide, and covers an area in which I can comfortably move around. It has a peak, hill, valley, and waterfall. There are fields and vegetable patches, and a fence, a wall, and a twig gate are installed. There is a tower, a house, a hall, a kitchen, the main room, the outer room, the guest room, a separate room, a gazebo, an altar, and a yard. Vegetables, unique and beautiful flowers, and trees are planted, such as pine, camphor tree, Japanese elm, Korean willow, hardy rubber tree, Korean red pine, Schmidt birch, Chinese scholar tree, nut-bearing torrey, bamboo, plantain, Japanese apricot flower, Korean paulownia, rose of Sharon, pomegranate, apricot, peach, plum, cherry, pear, chestnut, persimmon, common Jujube, Chinese matrimony vine, grape, orchid, chrysanthemum, white mulberry, Kozo or Japanese paper mulberry, varnish tree, cucumber, pumpkin, Welsh onion, ginger, garlic, taro, radish, mustard, cluster mallow, eggplant, oriental garlic, Chinese cabbage, etc., and plants such as soybean, common sweet flag, orange daylily, wisteria, crimson grapevine, Korean angelica, lotus, redroot gromwell, watershield plant, and East Asian water chestnut are planted [41] (p. 18). (Author's translation)

Pyeonsaengji (Life-long Ambition), written by Jang Hon: ... (the preface was omitted) the grape tree rack is planted beside it to block the sunlight, (omitted) the apple tree, Korean pine, and Korean castanea are planted in sunny places. The corn seeds are sowed in the remaining dry land, and cucumber and garlic are planted to the east of the fence. Cluster mallow, mustard, and leaf mustard are planted in a divided section in front of the house, vertically and horizontally. Radish and Chinese cabbage are planted on the west side of the house, and they are spaced out. When the eggplant is planted on the edge of the field, the purple and white light will stand out. Oriental melons and pumpkins are placed all over

the fence to climb trees. In this way, I see the flowers as they bloom, I rest under the shade as trees grow, I pick fruit when they come, and once they've grown, I boil and eat the vegetables. I can enjoy true leisurely and comfortable living. It is my hope that I enjoy such a life every day and pass it on to my descendants [42] (p. 265). (Author's translation)

Jehwangsangyuincheop (Ideal Garden for Recluse), written by Jung Yak-yong: The arrangement of the vegetable patch should be flat like a millstone, so it looks like standing water. By dividing sections and making ridges to be square, as they are distinguished by type, cluster mallow, Chinese cabbage, Welsh onion, garlic, etc., they should not be mixed with each other. (omitted) In the kitchen garden in the east, the pine tree, Korean ginseng, balloon flower, conidium, Korean angelica, etc. are planted [43] (pp. 136–139). (Author's translation)

The above writings on the imaginary garden clearly show the desire to achieve self-sufficiency by planting fruits, vegetables, and herbs in a house garden, with the goal of cultivating the garden for productive, rather than ornamental purposes. From this, the original form of the Korean residential garden emerged. The remaining residential gardens of the Joseon Dynasty have been gradually disappearing. Residential gardens that still retain their original form are difficult to find because few survived Japanese colonial rule and modernization; however, Korean residential garden culture can best be inferred through Joseon scholars' writings. It is important to note that, although the imaginary garden is not real, it is a productive garden designed with materials and plants easily obtained in the surrounding environment. A list of plants that appear in the imaginary garden shows that the scholars dreamed of creating a useful garden by planting fruit trees, herbs, or vegetables, rather than focusing on visually appealing and artistic elements (See Appendix A, Table A1).

As is evident through the Joseon scholars' writings on the imaginary garden, their goal of creating a sustainable space that is useful for daily living contrasts greatly with the goal of gardens designed for the modern South Korean home or apartment complex, which place great importance on the visual aspects at a high cost.

#### 4. The Sustainable Garden of the Modern Korean Residential Area

Local food is an agricultural product grown within a 50 km radius that does not require long-distance transportation, which retains freshness by reducing the distance between producers and consumers. While the "edible city" movements of the British "Continuous Productive Urban Landscapes" [44] and the American Society of Landscape Architects are prevalent in the field of urban agriculture, they also influence garden culture. Urban agriculture is a globally trending activity in which modern city dwellers can engage to escape from city life (see Figures 4 and 5), and it became popular worldwide in 2009 when Michelle Obama, the First Lady of the US at the time, was seen planting vegetables in the White House "kitchen garden" (see Figure 6).

Mrs. Obama planted the White House Kitchen Garden on the South Lawn in the spring of 2009 to initiate a national conversation around the health and wellbeing of the country. In time, that conversation led to "Let's Move!", which Mrs. Obama launched in 2010 to help kids and families lead healthier lives. Inspired by the First Lady's passion for healthy living, people across the country have revisited the American tradition of starting a vegetable garden at home. Growing fruits and vegetables at home is a great way to learn where food comes from, spend time with others, and incorporate healthy foods into favorite meals. Even those who do not consider themselves "Master Gardeners" can harvest their own produce at local schools, in their backyards, or at various sites around the community [48].



Figure 4. Festival Beach Food Forest is a pilot project in Austin, Texas [45].



Figure 5. Tyler's Edible Garden Project [46].





**Figure 6.** Michelle Obama in the White House “kitchen garden” [47].

In this way, the kitchen garden goes beyond simple food production and impacts healthy food harvesting, physical activity, and community formation. It is also significant that this is being done in the gardens of the White House, the residence of the President of the United States. In South Korea, although the Cheongwadae, the presidential residence, is located in the backyard of Gyeongbokgung Palace, the royal palace of the Joseon Dynasty, it has not inherited the tradition of productive landscaping from the Joseon Dynasty; it is maintained as a garden centered on lawns and ornamental trees.

Modern urban agriculture was introduced in South Korea around 2000 because city dwellers were bored with the soullessness of urban living [49–51] and began spending their time on weekend farms. In April of 2012, Seoul declared 2012 as the first year of urban agriculture. To truly become a capital of urban agriculture, Seoul formulated a master plan to create 1800 urban gardens within a 10-min walking distance from every home by 2018, through the development of 220 hectares of unused and abandoned land. Seoul also announced plans to become a city with one million urban farmers by 2020 [52]. As a result of the social atmosphere and the desire to engage in urban agriculture, the population participating in weekend farming in Seoul increased from 287,000 in 2012 to 640,000 in 2020 [53,54]. Looking at the current status of urban vegetable gardens in Seoul, as of 2020 (see Figure 7), access to urban gardens appears to be poor (inadequate) because most of these gardens are located on public land in the city rather than in residential areas. Therefore, most of them are operated as weekend farms. Given the reality that more than half of the residential structures in Seoul are apartments, if gardens are introduced at apartment complexes, productive gardens will be available in daily life.

In South Korea, traditional housing stock is gradually disappearing, and the traditional concepts of utilizing space are not applied to the modern housing environment [16–18], such as the typical apartment complex, making it impossible to create a productive garden in these spaces. Although there are examples of joint vegetable gardens created in apartment complexes, they remain a formal urban agricultural space. These joint gardens can be seen as places for leisure activity for urban residents without the definition, range, or methods of urban agriculture.







**Figure 8.** Location of Andong's Hahoe Village and Asan's Oeam Village (author's drawing).

In apartment complexes, the most common residential style in modern South Korea, it is customary to create a gorgeous, high-class garden, which does not have the same purpose as gardens in the traditional housing culture. Foreign design elements are indiscriminately introduced, such as expensive, mature trees chosen for aesthetic appeal without considering the ecological characteristics of the plant, or installing a facility made of high-quality materials, or paving a lawn, which is not something that is suited to South Korean sentiment or the environment. Creating these types of gardens leads to serious problems, such as conspicuous and wasteful landscaping conducted to increase the apartment's sale price and generate high management costs in the process.

Of course, the residential garden is a very private space reflecting personal preferences. However, if people have no knowledge or understanding of Korean garden culture, and they create gardens by introducing foreign design elements, their appropriateness for reflecting Korean emotions and natural environments is a matter to consider. We think the goal of the residential environment, especially the garden, should be to create a comfortable and familiar environment. Even if it is not possible to apply the same garden culture that has been passed down in accordance with the natural environment and culture of each country in the world, would it not be possible to inherit and develop it in a modern way (especially landscape architects) if it is understood?

## 5. Conclusions

Until recently, South Korean gardens were highlighted as being in harmony with nature, aesthetically pleasing, and ideological. However, it has been confirmed that edible landscapes and productive landscapes were made in the Korean residential environment during the Joseon Dynasty. The fact that productive landscaping took place in a residential space where daily life was common, regardless of economic power, makes it comparable to the modern residential environment. A longstanding goal in garden construction has been to create a garden for humans to live in harmony with nature within a residential space; in other words, gardens were for growing vegetables, fruits, and herbs. The image of the productive garden was further embodied by the imaginary garden, which was prevalent in not only the Joseon Dynasty Palace and private homes but also the minds of

late Joseon Dynasty scholars. In the imaginary garden, the composition of the housing space is tangible, and the economic activities and lifestyles within are presented practically. The Korean imaginary garden has great significance because it is about envisioning a simple and productive garden rather than pursuing an escapist utopia.

While the current global trend emphasizes diversity in the environment and the productive landscape, the residential environment of Korea in the Joseon Dynasty already reflected the same concept, as reflected by current ESSD concepts. However, the residential environment in South Korea has been changed as the nation is experiencing unprecedented rapid industrialization. In particular, the urban residential environment can be represented by apartments. Although many city dwellers live in apartments, the exterior space is visually and luxuriously landscaped. This phenomenon prioritizes the real estate value of the apartment, and advanced landscaping is not a real benefit to those who consider the apartment to have a pure residential purpose. Although productive landscaping can be helpful for healthy food production and community revitalization if the space outside the apartment where many people live is densely populated, local governments are promoting urban agriculture by preparing separate public land.

Lessons from the urban agriculture and productive landscapes that have formed the backbone of the traditional Korean housing environments have many applications. When creating a residential environment, emphasizing the simple and practical aspects, rather than focusing on being flashy or visually appealing, is important in South Korea and in the design of modern housing complexes worldwide. In a modern city where urban population concentration is accelerating, it will be difficult to secure separate land for urban agriculture. Therefore, integrating urban agriculture near residential areas can be an efficient method for protecting agriculture.

This study examined modern South Korean cities based on the fact that productive landscaping was made in the residential environment of the Joseon Dynasty in Korea. This not to say that productive landscaping should be introduced into modern dwellings simply because it was done in dwellings in “traditional” Korean society. The relevant and meaningful lessons come from asking “Why did our ancestors place importance on productive landscaping, and why do we need to think about what it means to us today?” It is not necessary to introduce urban agriculture in South Korea just because it is popular all over the world. No matter how good the system is, the situation and culture of each country must be taken into consideration before it is accepted and established in other places. In this respect, we should consider what our ancestors did in Korea, although this tenant is true not only for South Korea but for any other country around the world. Experience has long been built upon trial and error; therefore, the importance of traditional culture can be discovered. It has been said that “designers design ‘experiences’ rather than places, spaces, and things” [59]. Finding, inheriting, and developing the benefits of the traditional garden culture housing environment is an effective solution for developing a sustainable environment to counter the side effects of living in a modern urban environment.

**Author Contributions:** Conceptualization, H.-S.K.; investigation, H.-S.K.; validation, H.-S.K.; writing—original draft, H.-S.K.; methodology, K.-W.K.; project administration, K.-W.K.; writing—review and editing, K.-W.K. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

Table A1. Plants that appear in the imaginary garden.

Sort	Name of Plant	Botanical Name	Useful Part
Evergreen tall tree	Camphor tree	<i>Cinnamomum camphora</i>	
	Nut-bearing torreyia	<i>Torreya nucifera</i>	Fruit
	Korean red pine	<i>Pinus densiflora</i>	
	Korean pine	<i>Pinus koraiensis</i>	Fruit
Summer-green tall tree	Oriental persimmon	<i>Diospyros kaki</i>	Fruit
	Wilson's elm	<i>Ulmus davidiana</i>	Bark
	Apple tree	<i>Malus asiatica</i>	Fruit
	Jujube	<i>Zizyphus jujuba</i>	Fruit
	Hardy rubber tree	<i>Eucommia ulmoides</i>	
	Japanese apricot	<i>Prunus mume</i>	Fruit
	Bakdal birch	<i>Betula schmidtii</i>	
	Korean castanea	<i>Castanea crenata</i>	Fruit
	Pear	<i>Pyrus pyrifolia</i>	Fruit
	Korean willow	<i>Salix koreensis</i>	Bark
	Peach	<i>Prunus persica</i>	Fruit
	White mulberry	<i>Morus alba</i>	fruit, leaf
	Common Apple	<i>Malus pumila</i>	Fruit
	Apricot	<i>Prunus armeniaca</i>	Fruit
	Pomegranate tree	<i>Punica granatum</i>	Fruit
	Korean paulownia	<i>Paulownia coreana</i>	fruit, stem
Varnish tree	<i>Rhus verniciflua</i>		
Japanese plum	<i>Prunus salicina</i>	Fruit	
Chinese scholar tree	<i>Sophora japonica</i>		
Shrub	Chinese matrimony vine	<i>Lycium chinense</i>	Fruit
	Kozo or Japanese paper mulberry	<i>Broussonetia kazinoki</i>	Bark
	Rose of Sharon	<i>Hibiscus syriacus</i>	
	Chinese bush	<i>Prunus tomentosa</i>	Fruit
	Cape jasmine	<i>Gardenia jasminoides</i>	
	Hardy orange	<i>Poncirus trifoliata</i>	Fruit
Herbaceous plant	Eggplant	<i>Solanum melongena</i>	Fruit
	Leaf mustard	<i>Brassica juncea</i>	Leaf
	Mustard	<i>Brassica juncea</i> var. <i>crispifolia</i>	Leaf
	Sweet potato	<i>Ipomoea batatas</i>	Root
	Korean angelica	<i>Angelica gigas</i>	Root
	Balloon flower	<i>Platycodon grandiflorum</i>	Root
	Garlic	<i>Allium sativum</i>	Root
	East Asian water chestnut	<i>Trapa japonica</i>	Fruit
	Crimson grapevine	<i>Vitis coignetiae</i>	Fruit
	Radish	<i>Raphanus sativus</i>	Root
	Chinese cabbage	<i>Brassica rapa</i>	Leaf
	Oriental garlic	<i>Allium tuberosum</i>	Leaf
	Hairless woundwort	<i>Stachys japonica</i>	
	Spinach	<i>Spinacia oleracea</i>	Leaf
	Cluster mallow	<i>Malva verticillate</i>	Leaf
	East Indian lotus	<i>Nelumbo nucifera</i>	Root
	Cucumber	<i>Cucumis sativus</i>	Fruit
Corn	<i>Zea mays</i>	Fruit	
Orange daylily	<i>Hemerocallis fulva</i>	Leaf	



Table A1. Cont.

Sort	Name of Plant	Botanical Name	Useful Part
	Korean ginseng	<i>Panax ginseng</i>	
	Rose	<i>Rosa hybrida</i>	
	Redroot gromwell	<i>Lithospermum erythrorhizon</i>	Root
	Oriental melon	<i>Cucumis melo</i>	
	Common sweet flag	<i>Acorus calamus</i>	
	Soybean	<i>Glycine max</i>	Fruit
	Taro	<i>Colocasia esculenta</i>	Root
	Welsh onion	<i>Allium fistuosum</i>	Stem
	Pumpkin	<i>Cucurbita moschata</i>	Fruit

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