



An Exploration of Crops Listed in *Gwanhyuji*, an Agricultural Book in the Joseon Dynasty for the Promotion of the Diversity of Urban Gardens

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ABSTRACT

Urban agriculture, which promotes communication in vulnerable classes and the formation of social networks has been gaining attention with an emphasis on healthy city, elderly-friendly city, safe city and happy city as future keywords about urban life. There is a growing interest in public awareness in many areas such as health, society, economy, and ecology. As an attempt to improve the diversity of urban gardens, this study begins with collecting suitable crops for urban gardens from "*Imwongyeongjeji* (林園經濟志)," an encyclopedia written by Yoo-Ku Seo, a scholar in the 18–19th century. Out of those recorded in "*Gwanhyuji* (灌畦志)," 128 kinds of crops with linkage of the historical achievements of the realists who gave their priority to public welfare were selected and 53 crops which had traditionality, historicity, health functionality and popularity were finally selected. The properties (cold, warm, clam) of the selected crops were evenly distributed, and there was no crop that was hot and cool. In addition, the number of crops that have a sweet taste was the highest, followed by spicy and bitter, but there was no salty vegetable, which can be attributed to the fact that 12 namuls (wild vegetables) that grow in seas were excluded in this study since they were not suitable for urban gardens. Urban gardens can be transformed from those that focus on primary production and secondary consumption activities into a new resource that offers educational and traditional values by applying humanities to urban agriculture as a content resource in the era of cultural consilience and convergence. It is expected to satisfy urban residents' intellectual and participatory needs and to enhance the diversity and utility of urban gardens by applying traditional knowledge to a new model of urban agriculture. We hope that further research will be conducted to develop new types and models of urban agriculture going forward.

Keywords: community, functional crops, humanities theme, *Imwongyeongjeji*, urban agriculture

Introduction

A variety of activities that utilize urban agriculture have demonstrated their values in various areas including health, society, economy and ecology, raising people's interest in urban agriculture. The Ministry of Agriculture Food and Rural Affairs (MAFRA) has published the Master Plan for Promoting Urban Agriculture every five years, and the results of the first 5-year master plan (2013-2017) show that the area of urban gardens increased more than two times in 2017 (1,106 ha) compared to the area in 2013, and that the number of participants reached 1,894,000 (6.3 m² per

person). The second 5-year plan (2018-2022) also suggests strategies to increase the area of urban gardens and the number of participants to 2,000 ha and 4,000,000 persons respectively, which demonstrates that people's interest in urban gardens continues to grow (MAFRA, 2018). Despite the increasing number and level of users, urban agriculture is still limited to certain crops that have been cultivated and utilized as foods only. With the aim of suggesting crops to promote the diversity and utility of urban gardens, *Imwongyeongjeji* (林園經濟志) was selected as a reference in this study. *Imwongyeongjeji* is a comprehensive agricultural book, a type of encyclopedia written by Seo,

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Yoo-Ku in the Joseon Dynasty period and contains abundant information on vegetables utilized in the 19th century in Joseon.

Out of 893 biological resources recorded in *Imwongyeongjeji*, this study aimed to select crops that can be utilized in modern times and integrate traditionality and historicity, and at the same time, health functionality and popularity that are required in modern society, focusing on native resources including vegetables listed in *Gwanhyuji* (灌畦志), grasses and tree sprouts, vegetables that grow on mountains and fields, vegetables that grow in seas, fruits and medicinal herbs. It is the list of crops that reflects the philosophy of Silhak, a Korean Confucian social reform movement in late Joseon that put people’s livelihood first. It is possible to focus on faithfulness in process rather than results by restoring the value of labor through the traditional philosophy called Silhak and to spread the epistemological interest as a philosophy of experience for better communication and consideration between neighbors (Sim, 2008). Social values can also be secured by increasing the ‘family · community (-1.4%)’ index, the only one that showed a low score among the items of the composite index of people’s quality of life in Korea (Statistic Korea, 2017), through humanistic urban agricultural activities. Lastly, this study aimed to provide information for people to apply the concept of Yaksikdongwon (藥食同源, food and medicine come from the same source) to daily life by identifying and informing urban residents of the taste and properties of crops that were recorded in *Imwongyeongjeji* and *Donguibogam* and were utilized to prevent diseases, and for them to enjoy and learn urban gardens in which they can be satisfied psychologically and emotionally by selecting crops that meet their needs. By doing so, urban agriculture is expected to play a role as

a cultural space.

Research Methods

Subjects

This study was conducted from September to November, 2018 and explored and examined the content of *Gwanhyuji* (灌畦志), a part that introduced crops in *Imwongyeongjeji* (林園經濟志, one of many agricultural books in the Joseon Dynasty period that tell the stories and values of traditional life) and has been recognized as a historical content. In order to utilize historical and cultural resources with humanistic themes based on historical stories, folk stories and traditional knowledge written in ancient documents, documents on crops in *Imwongyeongjeji*, a voluminous encyclopedia written by Seo, Yoo-Ku (徐有榘, 1764-1845) between the late 18th century and the early 19th century were reviewed, and crops that connect the past and present and tell stories were selected and listed based on *Gwanhyuji* that introduced vegetables to utilize in urban agriculture (Fig. 1).

Criteria for the selection of crops

As facilities that are created for relaxation and production in vegetable gardens has been utilized widely, the purposes of using urban vegetable gardens have been diversified from producing crops to tending spaces for landscaping purposes and there is also a growing need for utilizing native resources (Hong et al., 2018). Against this backdrop, this study aimed to develop a model for vegetable gardens in order to expand the diversity of urban gardens

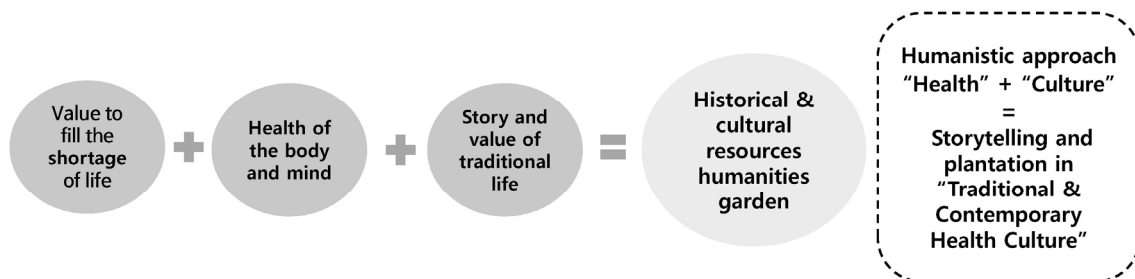


Fig. 1. The content of the study.

and to realize urban agriculture as a culture that embraces publicness with its focus shifting from personal perspectives to community-based or socio-cultural perspectives.

Gwanhyuji contains information on farming vegetables and medicinal herbs, and shows the list of practical crops for fields that were selected and summarized from various agricultural books. ‘Hyu (畦)’ in *Gwanhyuji* (灌畦志) means a ridge, a key part in fields, and explains its landscaping values and management convenience as an eco-friendly farming technique in detail. For this reason, this study aimed to utilize not only popular knowledge but also native resources in exploring crops in order to conserve and distribute traditional values through urban agriculture and to promote the humanistic values of urban agriculture by utilizing plants that have cultural and historical contexts in urban agriculture without simply focusing on its physical purposes such as production. This study also attempted to select crops that embrace overall aspects including the time and space of actions, stories and subjects, and reflect social and cultural contexts that have been passed down by certain communities.

Analysis methods

This study coded data through comparison and analysis in the process of data analysis based on the grounded theory suggested by Glaser and Strauss (1967), and developed a framework based on the results to formulate a theory using a qualitative research methodology in the process of interpretative inquiry. Popularity was assessed through a questionnaire survey. First, crops (traditionality) mentioned in *Imwongyeongjeji-Gwanhyuji*, an ancient document (Seo, 2010), were listed according to their Korean and scientific

name based on their Chinese character name. This study selected crops that have stories among those that were mentioned in folk songs such as *Nonggawalryungga* (農家月令歌) and *Heungboga* (興甫歌), and crops that were found to have values as ecological resources (historicality) through traditional knowledge in documents such as *Donguibogam* (東醫寶鑑) and *Imwongyeongjeji* (Yeom et al., 2011). At the same time, crops of which effects were identified and that were repeatedly introduced were prioritized in this study among native resources that have stories in which people are highly interested in modern society such as antioxidant effects (health functionality; Rural development administration-National academy of agricultural sciences, 2014) and *Healthful crops in mountains and fields* that introduces anti-aging crops (Jang, 2009). Through a questionnaire survey, crops that urban residents preferred were identified, and their availability (popularity) in markets was examined. According to these criteria, crops that were selected more than three times in each item were finally selected (Fig. 2).

Results and Discussion

Traditionality

Imwongyeongjeji written by Seo, Yoo-Ku introduced the most basic things in human life (Kim, 2015), added ‘namuls (edible wild vegetables)’ in Joseon that were not mentioned in the Chinese literature and classified 28 wild plants of which sprouts were used to cook side dishes into a separate item, recognizing namuls as one of the key characteristics of Joseon foods. In *Gwanhyuji* composed of four

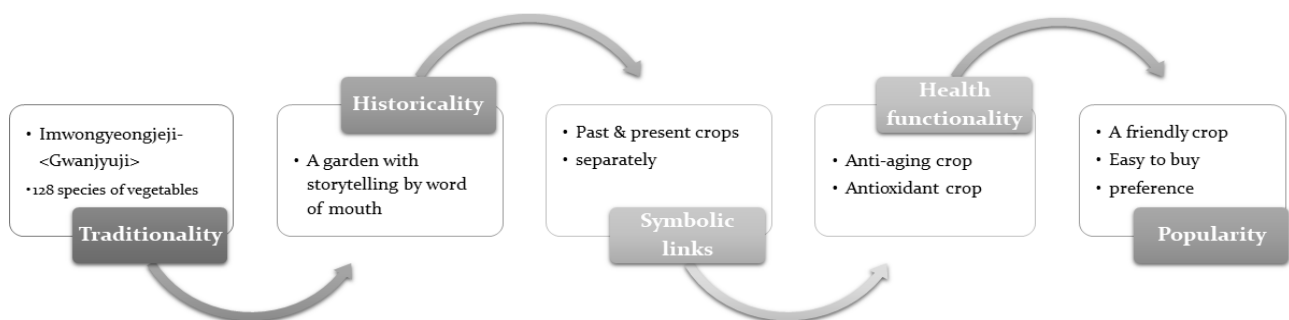


Fig. 2. Process of crop search.

books, 33 vegetables that were quoted in a total of 44 documents were mentioned in traditional agricultural books, and plants of which leaves and sprouts were used to cook side dishes were introduced as a group of namuls, unique Joseon foods. In addition, 27 types of plants that grow on mountains and fields were classified into the category of wild vegetables (Table 1). Other than those that grow on the ground, 12 types of namuls that grow in seas were also included in the category of vegetables, but since it is not easy to grow them in urban gardens, they were excluded from the category along with crops that grow in wetlands. Fruit-bearing plants (葷類), unique edible plants in East Asia were separately categorized, and traditional medicinal herbs in Joseon that were used to cook namul side dishes such as *Platycodon grandiflorum*, *Angelica gigas*, *Senna tora*, *Codonopsis lanceolata* (Siebold & Zucc) Trautv., *Glehnia littoralis*, *Arctium lappa* L. and *Plantago asiatica* L. were found to be plants that commonly grew on mountains and fields in Joseon (Kim, 2015). The first record on vegetables used in Korea is *Samgukyusa* (三國遺事) on the myth of the creation of the first kingdom of Korea (Gojoseon) in which *Artemisia princeps* and *Allium*

sativum were mentioned, and on the myth of the founding monarch of Shilla, Bak Hyeokgeose, which starts from *Lagenaria leucantha* (瓠; Lee, 1999). There are records on *Lactuca sativa*, *Dioscorea batatas* and *Raphanus sativus* in the period of the Three States; *Oenanthe javanica*, *Cucumis sativus* L. and *Cucumis melo* var. *makuwa* in the period of the Unified Shilla; and *Cucumis sativus* L., *Solanum melongena*, *Raphanus sativus*, *Allium fistulosum* L., *Malva verticillata* L., *Lagenaria leucantha*, *Brasenia schreberi*, *Codonopsis lanceolata* (Siebold & Zucc) Trautv., *Allium sativum* for. *pekinense* Makino, *Pyrus serotina* Rehder, *Oenanthe javanica*, *Acorus calamus*, *Sanguisorba officinalis*, *Portulaca oleracea*, *Artemisia princeps*, *Sagittaria sagittifolia*, *Phytolacca esculenta* VanHoutte, *Xanthium strumarium*, *Panax ginseng*, *Chrysanthemum morifolium*, *Achyranthes japonica*, *Benicasa hispida*, *Allium fistulosum* L., *Plantago asiatica* L., *Asarum sieboldii* Miq, *Akebia quinata*, *Arctium lappa* L., etc. in the period of Goryeo (Lee, 1999). Vegetables are crops that have been cultivated by people among namuls (wild vegetables) in nature. Namul is a native Korean word, and is connected to the “long-held knowledge system” discussed in evolutionary

Table 1. Composition of *Gwanhyuji* and crop names in each category (total 128 species)

Vol.	Title	Contents
1	Introduction	Farmland preparation / planting / fertilizing / harvest and storage
2	Vegetables (100 species)	<i>Allium chinense</i> (Bakeri), <i>Allium fistulosum</i> L., <i>Allium monanthum</i> Maxim., <i>Allium sativum</i> , <i>Allium tuberosum</i> Rottler ex Spreng., <i>Amaranthus mangostanus</i> L., <i>Aralia elata</i> (Miq.) Seem., <i>Beta vulgaris</i> var. <i>cicla</i> L., <i>Brassica juncea</i> (L.) Czern., <i>Brassica napus</i> L., <i>Brassica nigra</i> , <i>Brassica oleracea</i> var. <i>acephala</i> , <i>Brassica rapa</i> L., <i>Brassica rapa</i> var. <i>glabra</i> Regel, <i>Brasenia schreberi</i> J.F.Gmelin, <i>Capsicum annum</i> L., <i>Caryopteris incana</i> (Thunb. ex Houtt.) Miq., <i>Chrysanthemum coronarium</i> L., <i>Coriandrum sativum</i> L., <i>Daucus carota</i> L., <i>Foeniculum vulgare</i> Mill, <i>Ipomoea aquatica</i> ‘Reptans’, <i>Lactuca sativa</i> L., <i>Lentins edodes</i> , <i>Lilium lancifolium</i> Thunb., <i>Malva verticillata</i> L., <i>Medicago polymorpha</i> L., <i>Oenanthe javanica</i> (Blume) DC., <i>Perilla frutescens</i> var. <i>acuta</i> , <i>Persicaria longiseta</i> (Bruijn) Kitag., <i>Raphanus sativus</i> L., <i>Spinacia oleracea</i> L., <i>Stachys japonica</i> Miq., <i>Zingiber mioga</i> (Thunb.) Roscoe, <i>Zingiber officinale</i> Roscoe. Addition: Reference vegetables(28 species), vegetables in mountains and fields(27 species), vegetables from the sea(12 species)
3	Fruits (8 species)	<i>Benicasa cerifera</i> Savi, <i>Colocasia esculenta</i> (L.) Schott. <i>Cucumis sativus</i> L., <i>Cucurbita noschata</i> Duchesne, <i>Lagenaria leucantha</i> Rusby, <i>Luffa cylindrica</i> (L.) M. Roem., <i>Solanum melongena</i> L., <i>Trichosanthes kirilowii</i> . var. <i>japonica</i> kitam.
4	Medicinal plants (20 species)	<i>Achyranthes japonica</i> (Miq.) Nakai, <i>Adenophora remotiflora</i> (Siebold&Zucc) Miq., <i>Angelica acutiloba</i> (Siebold & Zucc) kitag., <i>Angelica polymorpha</i> Maxim, <i>Arctium lappa</i> L., <i>Asparagus cochinchinensis</i> (Lour.) Merr., <i>Attactylodes ovata</i> (Thunb) DC., <i>Codonopsis lanceolata</i> (Siebold & Zucc), <i>Elsholtzia ciliata</i> (Thunb.) HYI., <i>Ledebouriella seseloides</i> (Hoffm) H.Wolft, <i>Liriope platyphylla</i> F.T.Wang & T.Tang, <i>Mentha piperascens</i> (Malinv.) Holmes, <i>Panax ginseng</i> C.A.Mey, <i>Plantago asiatica</i> L. <i>Platycodon grandiflorum</i> (Jacq.), <i>Polygonatum lasianthum</i> Maxim, <i>Polygonatum odoratum</i> , <i>Polygonatum stenophyllum</i> Maxim, <i>Rehmannia glutinosa</i> (Gaerth.) Liboschitz, <i>Senna tora</i> (L.) Roxb., <i>Schizonepeta tenuifolia</i> var. <i>japonica</i> (Maxim) Kitag.

anthropology (Shin, 2012). These crops are suitable for the natural characteristics of this region, and contain humanistic implications such as management convenience, aesthetic and seasonal values, and promotion of public welfare such as flowers and fruits, which demonstrates the effective values of vegetable gardens that people in modern times want.

Historicality

Each crop that grows in vegetable gardens has its own story, and the story has long been passed down orally. The storytelling that this study focused on is not to recite events over time, but to unfold values obtained after overcoming changes and hardships in life or the meaning of life obtained in the process. This study attempted to deliver messages that contain these values and meaning and are easily understandable based on the framework of traditional stories (Im, 2011), and to create a bond of sympathy in the form of communication by increasing people’s interest in crops.

The first record reviewed in this study was a story about *Allium fistulosum* L., *Chrysanthemum coronarium* L., *Lactuca sativa*, *Capsicum annuum*, *Solanum melongena*, *Cucurbita spp.* and *Lagenaria leucantha* mentioned in *Nonggawallyungga* (農家月令歌). Our ancestors raised their immunity and overcame spring fever by picking and seasoning abundant wild vegetables (namuls) in spring on mountains and fields,

eating those namuls in daily life. In particular, sprouts in spring mostly have a bitter taste which reduces the fever and relieves drowsy and sluggish feelings, and stimulates people’s appetite. For this reason, most families had a vegetable garden within their houses in the past, and one of the most basic and general foods in our daily meals is vegetables including mushroom and tree shoots (Fig. 3). *Nonggawallyungga* is the song that our ancestors enjoyed, and in particular the lyrics of the first, second and third months of the year contains stories about namuls. “The first month of the year - Add regrowing a lettuce and water parsley to radish sprouts. It looks fresh and no need to envy the five spicy vegetables. Boil dried wild vegetables. They give six flavors. The second month of the year - Too early to pick wild vegetables on mountains. Pick namuls on fields instead. Korean lettuces, a lettuce and artemisia. Wild chive kimchi and shepherd’s purse soup raise your appetite. The third month of the year - Plant pumpkin under fences, gourd under eaves, wax gourd near walls. They will creep over the walls. Plant white radish, cabbage, curled mallow, lettuce, chili, eggplant, green onion and garlic on every corner of the ground, Cut pussy willow and make fences. Protect them from dogs and chickens, and then they will grow thickly. Make a separate field for cucumber, and manure the field fully. There’s nothing better than cucumber as a summer side dish.”

<p>Leek, Crown daisies, Lettuce, Chili, Pumpkin, Gourd</p> <p>“Summer side dish of Nong-gawollyeong ga”</p> <p><small>In order to restore immunity and win chunghon, our ancient ancestors lived in close proximity to the herbs that were cooked to eat vegetables. So, in the past, it was basic to have a chaotic field at home. The vegetables that can be eaten or spontaneously eaten are called herbs or plants. Or the materials of edible wild plants. The herb is a stigma and a living thing. It is one of the most basic and common foods among the corsion of our common sense, and all the vegetable, mushrooms and tree sprouts are used as herbs.</small></p>	<p>Heungbo’ s Pak Tyeong</p> <p><small>One of the twelve courts of Pansori is called Heungbu Tareong, Heungbuga, and Shungbo. Shin Jae Hyo is one of the six yards who set up the system by arranging the pansori, and he dramatized the heungbujeon. In general, Pansori’s editorial, adapted and adapted by Shin Jae - hyo, reveals the duality of being oriented toward upper culture and returning to lower culture, and Park Tareyung is a work that shows a strong return to lower culture.</small></p>	<p>paruchos(Mool) & Wangangchos(Lettuce)</p> <p>“The hidden attraction of common things”</p> <p><small>The blue fall lettuce does not change with the beef because it thinks that milk matter coming out from the stem is good for the energetic. In fact, lettuce is rich in vitamins and minerals, and it is a vegetable that can absorb more nutrients to eat. In addition, there is an ingredient called lactarium which has an analgesic and anesthetic action in the body, and it comes to sleep well when it eats lettuce. Goryeo women who were taken to Yuan dynasty planted lettuce in the courtyard of the palace and cured one of them, but after the Yossaga people had eaten it, it became very popular. In the old literature, Lettuce can be harmful if you eat too much cold food like cucumber. One poor old mother ate the lettuce instead of the seaweed, and the stomach hurt and the baby saw the blue stool. This time, it boiled and boiled, and it was okay. Since then in the family who is about to disolve, even if it is necessary for planting more males, it is not enough to break down the loose houses, so it is called paru cha, and the lettuce was planted across the river, so it was said to have been a moonstone.</small></p>
<p>Leek</p> <p>“Choose the five viscera”</p> <p><small>The dig is planted everywhere. Because it does not die even after passing winter, it is also named as a gun. Seeds are not produced if they are planted by breaking the fangs. This is best to eat or use as medicine. The wave is cold in the upper limit. It treats fever, paralysis, swelling of the face and eyes, relieves the fetus, makes the fetus comfortable, brightens the eyes</small></p>	<p>“a green garden- Popeye’ s spinach”</p> <p><small>Popeye, who appeared in an anime called Sailor Paba, is a hero who has a superhuman strength when he eats canned spinach. The story of eating spinach for the beloved olives and defeating the villains has also sparked a 30 percent increase in American spinach consumption at the time. The origin of the spinach force is iron, although spinach is known to be especially abundant, but it is a theory that a German scientist at the end of the nineteenth century was mistakenly mistaken for the nutritional content of spinach. The same kinds of vegetables and iron are similar in content, but spinach and popeye, whether spinach or not, are vitamins and minerals.</small></p>	<p>“Herbs growing in the mountains and fields of Joseon”</p> <p><small>Pungseok is a herb and 20 kinds of plants. This is a summary of the plants that are commonly used in the mountains of Chosun, confirming the documents related to the herbaceous plant.</small></p>
<p>Poongsuk’s Medicinal vegetable garden</p> <p>“an old future”</p> <p><small>Poongsuk is an executive business book written on the basis of the spirit of the vivid old city conceived in consideration of ways to improve the everyday reality of Joseon. The vast book of 113 volumes is called the Encyclopaedia Britannica of Korea and is being translated to this day. Among them, Kwanhaji is a book that introduces plants that eat foods such as trees and grasses, taking into consideration the side dishes that come to the table in Joseon as a result of sorting and sorting of practical crops that grow in the fields. Herbs were also added as plants based on the high field familiarity of harvesting and utilization. In order to be familiar with the scene of the Joseon Dynasty, I did not appear in the Chinese literature, but I made a list of the Meo Dynasty</small></p>	<p>Coriander, Chinese chive, Butterbur</p> <p>“obtained rice in the mountain”</p> <p><small>Thirty - three species of seedlings defined by Seo Yu - gu, who planted seeds with water in the fields, were identified as rice special side dishes. These vegetables have come to our table up to the present with traditional plants and wild vegetables.</small></p>	<p>Seo Yu-gu’ s Gujungbup & Cabbage</p> <p><small>It is called a white pickle. “Sic I’m sawing, I’m sawing, I’m sawing, Logona, I’m a bad guy, I’m a pawn of the enemy, I’m a good guy. Good movie: Pull out the address. Do not come out with this guy, and you will not get anything. Only a meal of rice will come out of your life.</small></p>

Fig. 3. Crops in storytelling.

Another record that this study reviewed was *Baktaryeong* in *Heungboga* (興甫歌), one of the twelve original pieces of pansori, in which *Malva verticillata* (described as 破樓草) and *Lactuca sativa* (described as 越江草) were mentioned to sing the hidden charms of ordinary things with the story of Goryeo women who were taken to the Yuan Dynasty. In *Donguibogam* (東醫寶鑑), *Allium fistulosum* and *Spinacia oleracea* (described as 菠菱菜) were introduced as a plant that relaxes the five viscera. *Gwanhyuji* (灌畦志) in *Imwongyeongjeji* (林園經濟志) written by Seo, Yoo-Ku introduced medicinal herbs found on mountains and fields in Joseon including *Platycodon grandiflorus*, *Polygonatum odoratum*, *Angelica gigas* and *Ledebouriella seseloides*, and tells how Seo cooked side dishes with herbs that he collected from vegetable gardens, mountains and fields including *Coriandrum sativum*, *Amaranthus mangostanus* L., *Allium tuberosum* and *Petasites japonicus*. Lastly, Gujongbeop (區種法), a farming technique introduced by Seo, and *Brassica rapa* var. *glabra* Regel were also briefly summarized in order to suggest efficient ways to manage vegetable gardens in this study (Fig. 3).

Health functionality

Vegetables are a group of herbaceous plants cultivated by humans for food, and there are about 800 vegetables around the world (Lee, 2005). The number of vegetables consumed in Korea reaches over 140 including traditional Korean vegetables that have long been consumed and west-

ern vegetables that have been recently introduced to Korea (Lee, 2005). As people's interest in health increases recently, about 35 crops were suggested as 'storytelling native resources' and health functional crops in the list of *Healthy plants on mountains and fields* that have anti-aging effects (Jang, 2009). They were compared to those of which effects were identified in *Donguibogam* among crops selected in *Gwanhyuji*, and the results coincided with the finding of Cha et al. (2006) that they have various effects that can meet urban residents' needs for healthy foods (Table 2).

Popularity

Based on *Imwongyeongjeji*, a historical content that was written by Seo, Yoo-Ku, crops that tell the stories and values of traditional life in Korea were selected and people's preference was surveyed. According to the results of a questionnaire survey that was conducted during the 7th Urban Agriculture Expo in Korea in 2018, visitors were found to prefer vegetables the most followed by floricultural plants, herbs and medicinal crops. Among vegetables, *Capsicum annuum* was preferred the most, followed by *Lactuca sativa*, *Solanum melongena*, *Solanum lycopersicum* var. *cerasiforme*, *Cucumis sativus*, *Brassica rapa* var. *glabra* Regel, *Raphanus sativus*, *Spinacia oleracea*, *Daucus carota* and *Allium fistulosum* (Fig. 4). Among herbs and medicinal crops, *Rosmarinus officinalis* and *Lavandula species* were preferred the most, followed by *Mentha piperascens*, *Ligularia fischeri*, *Ocimum basilicum*, *Angelica*

Table 2. Anti-aging (antioxidant) functional crops with health benefits

Anti-oxidant crops in <i>Healthful crops in mountains and fields</i> (35 species)		
<i>Allium fistulosum</i>	<i>Fragaria x ananassa</i>	<i>Punica granatum</i> L.
<i>Allium hookeri</i> Thwaites	<i>Glycine max</i>	<i>Rhododendron mucronulatum</i>
<i>Allium sativum</i> for. <i>pekinense</i> MAKINO	<i>Kalopanax septemlobus</i>	<i>Rubus crataegifolius</i> Bunge
<i>Capsella bursa-pastoris</i> (L.) Medik.	<i>Lycium chinense</i> Miller	<i>Schizandra chinensis</i> BAALL
<i>Cirsium setidens</i>	<i>Mornordica charantia</i> Linnaeus	<i>Senna tora</i> L.
<i>Codonopsis lanceolata</i> (Siebold&Zucc.) Trautv.	<i>Opuntia humifusa</i> X	<i>Sesamun indicum</i>
<i>Crepidiastrum sonchifolium</i> (Bunge)	<i>Panax ginseng</i> C.A. Meyer	<i>Solanum melongena</i> L.
<i>Cucurbita maxima</i>	<i>Platago asiatica</i> L.	<i>Taraxacum platycarpum</i>
<i>Curcuma domestica</i>	<i>Platycodon grandiflora</i> Jacq.	<i>Viscum album</i> var. <i>coloratum</i>
<i>Dendranthema indicum</i>	<i>Portulaca oleracea</i> L.	<i>Vitis vinifera</i> L.
<i>Dioscorea japonica</i> Thunb.	<i>Prunus persica</i>	<i>Zizyphus jujuba</i> Mill.
<i>Epimedium koreanum</i> NAKAI	<i>Prunus tomentosa</i>	

gigas and *Matricaria chamomilla* (Fig. 4). During the interview, photos of crops were shown, and cultivation methods and effects were explained to visitors, and they showed their intention to purchase them. This indicates that they had a low awareness of the name of crops and a low level of knowledge about cultivation methods, which seemed to lead to a lack of diversity in the list of purchased crops, and people were also found to purchase certain crops only.

Suggestion of crops for historical and cultural vegetable gardens

Crops for urban vegetable gardens were reviewed, and a total of 128 species mentioned in the ancient literature were listed according to their Korean and scientific name based on their Chinese character name, and they were assessed based on the criteria suggested using an interpretative inquiry method including traditionality, historicity, health

functionality and popularity. Those who met more than three criteria were selected as a crop that can improve the humanistic value of urban agriculture (Table 3).

Focusing on the list of 128 species, their stories that were recorded in *Gwanhyuji* were reviewed, and those that were found to show a high healthy functionality and popularity were finally classified as shown in Table 4. They were basically classified based on the classification criteria in *Gwanhyuji*, and, according to the properties of crops, they were classified into the categories of vegetables, fruits and grasses, vegetables on mountains and fields, medicinal plants and flowers. Those that have overlapping properties were classified into multiple groups.

Properties and tastes of selected crops

The properties of crops in *Imwongyeongjeji* and *Donguibogam* are divided into the five Qi (五氣): hot (熱) ·

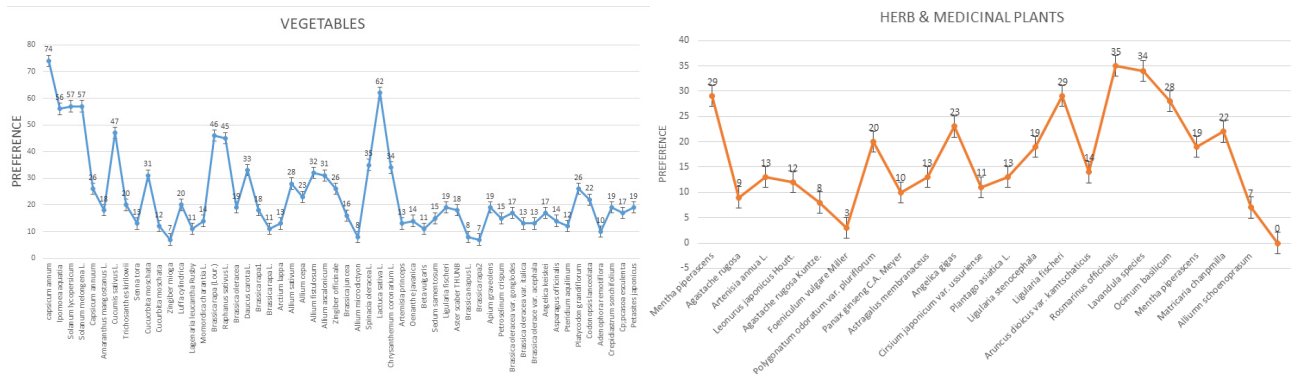


Fig. 4. Preferences of vegetables and herb & medicinal plants.

Table 3. Names of crops from *Gwanhyuji* and assessment of eligibility in four criteria

Division	Crop name			Eligible field			
	Chinese	Korean	Scientific name	Traditionality	Historicity	Health functionality	Popularity
蔬類 Vegetables	芥藍	개람	<i>Brassica oleracea</i> var. <i>acephala</i> Bailey	o	x	x	x
	苜蓿	개자리	<i>Medicago polymorpha</i> L.	o	x	x	x
	芥	겨자	<i>Brassica juncea</i>	o	x	x	x
	胡荽	고수	<i>Coriandrum sativum</i>	o	o	x	o
	番椒	고추	<i>Capsicum annum</i>	o	o	o	o
	薤菜	공심채	<i>Ipomoea aquatica</i>	o	o	x	o
	蔞菜	근대	<i>Beta vulgaris</i> var. <i>ciela</i>	o	o	o	o

Table 3. (continued)

Division	Crop name			Eligible field			
	Chinese	Korean	Scientific name	Traditionality	Historicality	Health functionality	Popularity
蔬類 Vegetables	百合	나리	<i>Lilium longiflorum</i>	o	o	x	o
	紫葱	달래	<i>Chrysosplenium ramosum</i> Maxim.	o	o	x	x
	木頭菜	두릅나무	<i>Aralia elata</i> (Miq.) Seem	o	x	o	o
	蒜附澤蒜	마늘	<i>Allium sativum</i> for. <i>pekinense</i> Makino	o	o	o	o
	芹	미나리	<i>Oenanthe javanica</i>	o	o	o	o
	菜蕪附胡蘿蔔	무(당근)	<i>Raphanus sativus</i> (<i>Daucus carota</i> .)	o	o	x	o
	菘	배추	<i>Brassica rapa</i> var. <i>glabra</i> Regel	o	o	x	o
	菌	버섯	<i>Lentinus edodes</i> (Berk.) Pegler	o	x	x	x
	韭	부추	<i>Allium tuberosum</i> Rottler ex Spreng.	o	o	o	o
	莧	비름	<i>Amaranthus mangostanus</i> L.	o	o	o	o
	萵苣	상추	<i>Lactuca sativa</i>	o	o	x	o
	薑	생강	<i>Zingiber officinale</i>	o	o	o	o
	甘露子	석잠풀	<i>Stachys japonica</i> Miq.	o	o	x	o
	蕪菁	순무	<i>Brassica rapa</i>	o	x	x	x
	蓴	순채	<i>Brasenia schreberi</i>	o	x	x	x
	茼蒿	쑥갓	<i>Chrysanthemum coronarium</i> L.	o	o	o	o
	菠薐	시금치	<i>Spinacia oleracea</i> L.	o	o	o	o
	葵	아욱	<i>Malva verticillata</i> L.	o	o	o	o
	蘘荷	양하	<i>Zingiber mioga</i> (Thunb.) Roscoe	o	o	x	o
	蓼	여뀌	<i>Persicaria hydropiper</i>	o	x	x	x
	薤	염교	<i>Allium chinense</i> (Bakeri)	o	x	x	x
	蕪薹	운대(유채)	<i>Brassica napus</i> L.	o	o	x	o
	紫蘇	차조기	<i>Perilla frutescens</i> var. <i>acuta</i>	o	o	x	o
	蘭香	층꽃나무	<i>Caryopteris incana</i> (Thunb. ex Houtt.) Miq.	o	x	x	o
	葱	파	<i>Allium fistulosum</i> L.	o	o	o	o
	茴香	회향	<i>Foeniculum vulgare</i> Miller	o	o	x	o
附互考蔬品 Reference vegetables	馬尾菜	갈대순	<i>Phragmites communis</i> Trin.	o	x	x	x
	珊瑚菜	갯방풍의 싹	<i>Glehnia littoralis</i>	o	o	x	x
	決明苗	결명자의 싹	<i>Senna tora</i> (L.) Roxb.	o	x	o	x
	牻牛苗	구기자나무의 싹	<i>Lycium chinense</i> Mill.	o	x	o	x
	藤蕪	궁궁이의 싹	<i>Angelica polymorpha</i> Maxim.	o	x	x	x
	香菜	노야기의 싹	<i>Elscholtzia patrini</i> GARCK.	o	x	x	x
	菘豆芽菜	녹두의 싹	<i>Vigna radiata</i>	o	x	x	x
	黃豆芽菜	누런콩의 싹	<i>Glycine max</i> Merr.	o	x	x	x
	辛甘菜	당귀의 싹	<i>Angelica gigas</i>	o	o	x	x
	萎蕤苗	등글레의 싹	<i>Polygonatum odoratum</i> var. <i>pluriflorum</i>	o	o	x	x
	薺萆苗根	모싯대의 싹뿌리	<i>Adenophora remotiflora</i> (S, et Z.) Miq.	o	x	x	x
	薄荷苗	박하의 싹	<i>Mentha piperascens</i>	o	x	x	x
蒲筍	부들순	<i>Typha orientalis</i>	o	x	x	x	
靈周菜	삼주의 싹	<i>Atractylodes japonica</i>	o	x	x	x	

Table 3. (continued)

Division	Crop name			Eligible field			
	Chinese	Korean	Scientific name	Traditionality	Historicality	Health functionality	Popularity
Reference vegetables	對節菜	쇠무릎의 싹	<i>Achyranthes japonica</i>	0	X	X	X
	鹿藿	여유콩의 싹	<i>Rhynchosia volubilis</i>	0	X	X	X
	五加苗	오가피나무의 싹	<i>Eleutherococcus sessiliflorus</i>	0	X	X	X
	牛蒡苗	우영의 싹	<i>Arctium lappa</i> L.	0	0	X	X
	忘憂菜	원추리의 싹	<i>Hemerocallis fulva</i> (L.) L.	0	X	X	X
	紅花菜	잇꽃의 싹	<i>Carthamus tinctorius</i> L.	0	0	X	0
	蜀葵苗	접시꽃의 싹	<i>Althaea rosea</i>	0	0	X	0
	竹筍	죽순	<i>Phyllostachys bambusoides</i> Siebold & Zucc	0	X	X	X
	地黃苗	지황의 싹	<i>Rehmannia glutinosa</i>	0	X	X	X
	車輪菜	질경이의 싹	<i>Plantago asiatica</i> L.	0	X	0	X
	青蘘	참깨의 싹	<i>Sesamum indicum</i>	0	X	X	X
	筆頭菜	층층등글레의 싹	<i>Polygonatum stenophyllum</i> Maxim.	0	X	X	X
	荊芥苗	헝개의 싹	<i>Schizonepeta tenuifolia</i> Briq.	0	X	X	X
	槐芽菜	회화나무의 싹	<i>Sophora japonica</i>	0	X	X	X
Vegetables in mountains and fields	薇	고비	<i>Osmunda japonica</i>	0	X	X	X
	蕨	고사리	<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	0	0	X	0
	熊蔬	곰취	<i>Ligularia fischeri</i>	0	0	X	0
	酸醬草	파리	<i>Physalis alkekengi</i> var. <i>franchetii</i>	0	X	0	0
	薺	냉이	<i>Capsella bursa-pastoris</i> (L.) Medik.	0	X	0	X
	山芥	논쟁이냉이	<i>Cardamine komarouvi</i> NAKAI	0	X	X	X
	香蒿	덤불쑥	<i>Artemisia rubripes</i> NAKAI	0	X	X	X
	冬蔬	동취	-	0	X	X	X
	馬薺	말냉이	<i>Thlaspi arvense</i> L.	0	X	X	X
	白菜	머위	<i>Petasites japonicus</i>	0	0	X	0
	藜	명아주	<i>Chenopodium album</i> var. <i>centrorubrum</i>	0	X	X	X
	萋蒿	물쑥	<i>Artemisia selengensis</i> Turce ex Besser	0	X	X	X
	苦菜	방가지똥(쑥바귀)	<i>Sonchus oleraceus</i>	0	X	X	X
	繁縷	별꽃	<i>Stellaria media</i> (L.) Vill.	0	X	X	X
	麥蕈	보리벚짚버섯	<i>Agrocybe erebia</i>	0	X	X	X
	墨應耳菜	산마늘	<i>Allium microdictyon</i> prokh.	0	X	X	0
	小巢菜	새완두	<i>Vicia hirsuta</i> (L.) Gray	0	X	X	X
	石耳	석이	<i>Umbilicaria esculenta</i>	0	X	X	X
	羊蹄	소리쟁이	<i>Rumex crispus</i> L.	0	X	X	X
	松茸	송이	<i>Tricholoma matsutake</i>	0	X	X	X
水蘇	수소	<i>Stachys baiodensis</i> Fisch ex. Benth	0	X	X	X	
蕺	약모밀	<i>Houttuynia cordata</i> Thunb.	0	X	0	0	
黃花菜	원추리의 꽃	<i>Hemerocallis fulva</i> (L.)	0	0	X	0	
紫芥	자개	<i>Stereopsis burtiarum</i>	0	X	X	X	
灰藿	좀명아주	<i>Chenopodium ficifolium</i>	0	X	X	X	
淸兒菜	청아채	-	0	X	X	X	
青玉菜	청옥채	-	0	X	X	X	

Table 3. (continued)

Division	Crop name			Eligible field			
	Chinese	Korean	Scientific name	Traditionality	Historicality	Health functionality	Popularity
附浦海菜品 Vegetables from the sea	乾苔	건태	<i>Porphyra tenera</i>	0	X	X	X
	羹苔	갱태	-	0	X	X	X
	昆布	긴다시마	<i>Laminaria angustata</i>	0	X	X	X
	紫菜	김	<i>Porphyra tenera</i>	0	X	X	X
	葇山苔	매생이	<i>Capsosiphon fulvescens</i>	0	X	X	X
	海藻	모자반	<i>Sargassum fulvellum</i> (Turner) C. Agardh	0	X	X	X
	海藻草	우뭇가사리	<i>Gelidium amansii</i> LAMOUROUX	0	X	X	X
	鹿角菜	진두발	<i>Chondrus ocellatus</i> Homes.	0	X	X	X
	海带	참다시마	<i>Laminaria japonica</i>	0	X	X	X
	青角菜	청각	<i>Codium fragile</i>	0	X	X	X
	海蘊	큰실말	-	0	X	X	X
	土衣菜	툇	<i>Hizikia fusifore</i> (HALVEY) OKAMURA	0	X	X	X
蔬類 Fruits	茄	가지	<i>Solanum melongena</i>	0	0	X	0
	冬瓜	동아	<i>Benincasa hispida</i> Thunb.	0	X	0	0
	瓠	박(편포)	<i>Lagenaria leucantha</i>	0	0	X	0
	絲瓜	수세미외	<i>Luffa cylindrica</i>	0	X	0	0
	黃瓜	오이	<i>Cucumis sativus</i> L.	0	0	X	0
	王瓜	주먹외	<i>Thladiantha dubia</i>	0	X	X	X
	芋	토란	<i>Colocasia esculenta</i>	0	X	0	0
	南瓜	호박	<i>Cucurbita spp.</i>	0	0	X	0
藥類 Medicinal plants	防風	갯방풍	<i>Glehnia littoralis</i>	0	0	X	0
	決明	결명자	<i>Senna tora</i> L.	0	X	0	0
	芎藭	궁궁이	<i>Angelica polymorpha</i> Maxim	0	X	X	X
	香薷	노야기	<i>Elsholtzia patrini</i> GARCK	0	X	X	X
	沙蔘	더덕	<i>Codonopsis lanceolata</i> (Siebold&Zucc) Trautv.	0	X	0	0
	桔梗	도라지	<i>Platycodon grandiflorum</i>	0	0	0	0
	菱蕒	등글레	<i>Polygonatum odoratum</i> var. <i>pluriflorum</i>	0	0	0	0
	麥門冬	맥문동	<i>Liriope platyphylla</i> F.T.Wang& T.Tang	0	X	0	0
	薺芎	모싯대	<i>Adenophora remotiflora</i> (Siebold&Zucc.) Miq.	0	X	0	0
	薄荷	박하	<i>Mentha piperascens</i>	0	X	0	0
	朮	삽주	<i>Atractylodes japonica</i>	0	X	X	X
	牛膝	쇠무릎	<i>Achyranthes japonica</i>	0	X	0	0
	當歸	승검초(당귀)	<i>Angelica gigas</i>	0	0	0	0
	牛蒡	우엉	<i>Arctium lappa</i> L.	0	X	0	0
	人蔘	인삼	<i>Panax ginseng</i> C.A.Mey.	0	X	0	X
	地黃	지황	<i>Rehmannia glutinosa</i> (Gaerth.) Liboschitz	0	X	0	0
	車前	질경이	<i>Plantago asiatica</i> L.	0	X	0	0
	天門冬	천문동	<i>Asparagus cochinchinensis</i> Merr.	0	X	0	0
	黃精	충충등글레	<i>Polygonatum stenophyllum</i> Maxim.	0	X	X	0
	荊芥	형개	<i>Schizonepeta tenuifolia</i> Briq.	0	X	X	X

Table 4. Recommended crops for culture garden with high health functionality and popularity

Garden type	Crop
Vegetables	<i>Allium fistulosum</i> L., <i>Allium tuberosum</i> Rottler ex Spreng.*, <i>Amaranthus mangostanus</i> L., <i>Aralia elata</i> SEEM, <i>Beta vulgaris</i> L., <i>Brassica juncea</i> (L.) Czern., <i>Brassica napus</i> L., <i>Capsicum annuum</i> L., <i>Chrysanthemum coronarium</i> L.*, <i>Coriandrum sativum</i> L., <i>Daucus carota</i> , <i>Foeniculum vulgare</i> , <i>Ipomoea aquatica</i> , <i>Lactuca sativa</i> L.*, <i>Malva verticillata</i> L., <i>Oenanthe javanica</i> (Blume) DC., <i>Perilla frutescens</i> var. <i>acuta</i> , <i>Spinacia oleracea</i> L.*, <i>Stachys japonica</i> Miq., <i>Zingiber mioga</i> (Thunb.) Roscoe, <i>Zingiber officinale</i> ROSC
Fruits & grasses	<i>Allium tuberosum</i> Rottler ex Spreng.*, <i>Benincasa hispida</i> Thunb., <i>Chrysanthemum coronarium</i> L.*, <i>Colocasia esculenta</i> (L.), <i>Cucumis sativus</i> , <i>Cucurbita</i> spp., <i>Lagenaria leucantha</i> Rusby, <i>Lagenaria siceraria</i> var. <i>gourda</i> , <i>Lactuca sativa</i> L.*, <i>Luffa cylindrica</i> (L.) Roem., <i>Solanum melongena</i> L., <i>Spinacia oleracea</i> L.*
Mountains & fields	<i>Hemerocallis fulva</i> *, <i>Houttuynia cordata</i> Thunb., <i>Ligularia fischeri</i> , <i>Petasites japonicus</i> , <i>Physalis alkekengi</i> var. <i>francheti</i> *, <i>Pteridium aquilinum</i> var. <i>latiusculum</i>
Medicinal plants	<i>Achyranthes japonica</i> , <i>Adenophora remotiflora</i> (Siebold&Zucc.), <i>Angelica gigas</i> Nakai, <i>Arctium lappa</i> , <i>Asparagus cochinchinensis</i> Merr., <i>Codonopsis lanceolata</i> , <i>Liriope platyphylla</i> , <i>Mentha piperascens</i> , <i>Plantago asiatica</i> L., <i>Platycodon grandiflora</i> Jacq., <i>Polygonatum odoratum</i> var. <i>pluriflorum</i> , <i>Rehmannia glutinosa</i> (Gaerth.) Libosch. ex Steud., <i>Senna tora</i> L.*
Flowers	<i>Althaea rosea</i> (L.) Cav., <i>Carthamus tinctorius</i> L., <i>Caryopteris incana</i> Miq., <i>Hemerocallis fulva</i> *, <i>Lilium longiflorum</i> Thunb., <i>Physalis alkekengi</i> var. <i>francheti</i> *, <i>Senna tora</i> L.*, <i>Sesamum indicum</i> , <i>Cassia tora</i> L.*

Note. The crop with the asterisk belongs to multiple groups.

warm (溫) · calm (平) · cool (涼) · cold (寒), and their tastes are divided into five tastes (五味): sweet, salty, sour, bitter and spicy. Compared to the properties and efficacy of plants recorded in various documents, they can be used to prevent and treat diseases utilizing their interaction and efficacy in the body of humans (Cha et al., 2006). Ancestors applied the properties and tastes of crops to the treatment of diseases, developed their recipes and consumed them in order to wisely utilize their efficacy. In particular, the consumed amount of vegetables has significantly decreased over time as people' dietary lifestyle changes.

There were a total of 20 crops that are cold (寒) and have a sweet taste including *Foeniculum vulgare*, *Beta vulgaris*, *Malva verticillata*, *Amaranthus mangostanus* L., *Spinacia oleracea*, *Oenanthe javanica*, *Lagenaria leucantha*, *Lagenaria siceraria* var. *gourda*, *Cucumis sativus*, *Benincasa hispida*, *Solanum melongena*, *Hemerocallis fulva*, *Pteridium aquilinum*, *Senna tora*, *Adenophora remotiflora* Miq., *Asparagus cochinchinensis* Merr., *Liriope platyphylla*, *Plantago asiatica*, *Lilium longiflorum*, *Althaea rosea*. There were four crops that are cold (寒) and have a spicy taste including *Foeniculum vulgare*, *Allium fistulosum*, *Chenopodium album* var. *centrorubrum* and *Platycodon grandiflora* and one crop has a sour taste (*Physalis alkekengi* var. *francheti*). A total of nine crops were found to be cold (寒) and have a bitter taste including *Aralia*

elata SEEM, *Lactuca sativa*, *Cucumis sativus*, *Senna tora* L., *Asparagus cochinchinensis*, *Liriope platyphylla*, *Platycodon grandiflora* Jacq., *Arctium lappa* L., and *Lilium longiflorum* Thunb. There were a total of 6 crops that are warm (溫) and have a sweet taste including *Stachys japonica* Miq., *Daucus carota* var. *sativa*, *Cucurbita* spp., *Ligularia fischeri*, *Angelica gigas* Nakai and *Rehmannia glutinosa* (Gaerth.) Libosch. ex Steud. and 15 crops were found to have a spicy taste including *Brassica napus*, *Capsicum annuum* L., *Stachys japonica* Miq., *Coriandrum sativum* L., *Brassica juncea* L., *Allium tuberosum* Rottler ex Spreng, *Daucus carota* var. *sativa*, *Zingiber mioga* Thunb., *Zingiber officinale* ROSC, *Petasites japonicus*, *Ligularia fischeri*, *Angelica gigas* Nakai, *Mentha piperascens*, *Caryopteris incana* Miq., and *Carthamus tinctorius* L. Two crops including *Allium tuberosum* Rottler ex Spreng and *Sesamum indicum* were found to have a sour taste, and *Mentha piperascens* and *Stachys japonica* Miq. were found to have a bitter taste (Table 5). There were a total of 10 crops that were calm (平) and have a sweet taste including *Chrysanthemum coronarium* L., *Codonopsis lanceolata*, *Daucus carota* var. *sativa*, *Ipomoea aquatica*, *Lagenaria leucantha* Rusby, *Lagenaria siceraria* var. *gourda*, *Luffa cylindrica* L., *Oenanthe javanica* DC., *Perilla frutescens* var. *acuta*, and *Polygonatum odoratum* var. *pluriflorum* and five crops including *Codonopsis lanceolata*, *Colocasia esculenta* L.,

Table 5. Classification of 53 species by taste & properties as proposed by *Donguibogam*

	Sweet	Salty	Spicy	Sour	Bitter
Cold (寒)	<i>Adenophora remotiflora</i> , <i>Althaea rosea</i> L., <i>Amaranthus mangostanus</i> L., <i>Asparagus cochinchinensis</i> Merr.*, <i>Benincasa hispida</i> Thunb., <i>Beta vulgaris</i> L., <i>Brassica juncea</i> L., <i>Cucumis sativus</i> *, <i>Foeniculum vulgare</i> *, <i>Hemerocallis fulva</i> , <i>Lagenaria leucantha</i> Rusby*, <i>Lagenaria siceraria</i> var. <i>gourda</i> *, <i>Lilium longiflorum</i> Thunb.*, <i>Liriope platyphylla</i> *, <i>Malva verticillata</i> L., <i>Oenanthe javanica</i> DC.*, <i>Plantago asiatica</i> L., <i>Senna tora</i> L.*, <i>Solanum melongena</i> L., <i>Spinacia oleracea</i> L.	-	<i>Allium fistulosum</i> , <i>Foeniculum vulgare</i> *, <i>Houttuynia cordata</i> Thunb., <i>Platycodon grandiflora</i> Jacq.*	<i>Physalis alkekengi</i> var. <i>francheti</i> *	<i>Aralia elata</i> SEEM, <i>Arctium lappa</i> *, <i>Asparagus cochinchinensis</i> Merr.*, <i>Cucumis sativus</i> *, <i>Lactuca sativa</i> L., <i>Lilium longiflorum</i> Thunb.*, <i>Liriope platyphylla</i> *, <i>Platycodon grandiflora</i> Jacq.*, <i>Senna tora</i> L.*
	<i>Angelica gigas</i> Nakai*, <i>Cucurbita</i> spp., <i>Daucus carota</i> *, <i>Ligularia fischeri</i> *, <i>Rehmannia glutinosa</i> (Gaerth.) Libosch. ex Steud., <i>Stachys japonica</i> Miq.*	-	<i>Allium tuberosum</i> Rottler ex Spreng*, <i>Angelica gigas</i> Nakai*, <i>Brassica juncea</i> L., <i>Brassica napus</i> , <i>Capsicum annuum</i> L., <i>Carthamus tinctorius</i> L., <i>Caryopteris incana</i> Miq., <i>Coriandrum sativum</i> L., <i>Daucus carota</i> *, <i>Ligularia fischeri</i> *, <i>Mentha piperascens</i> *, <i>Petasites japonicus</i> , <i>Stachys japonica</i> Miq.*, <i>Zingiber mioga</i> Thunb., <i>Zingiber officinale</i> ROSC,	<i>Allium tuberosum</i> Rottler ex Spreng*, <i>Sesamum indicum</i>	<i>Mentha piperascens</i> *, <i>Stachys japonica</i> Miq.*
Warm (溫)					
	<i>Chrysanthemum coronarium</i> L., <i>Codonopsis lanceolata</i> *, <i>Daucus carota</i> *, <i>Ipomoea aquatica</i> , <i>Lagenaria leucantha</i> Rusby*, <i>Lagenaria siceraria</i> var. <i>gourda</i> *, <i>Luffa cylindrica</i> L., <i>Oenanthe javanica</i> DC.*, <i>Perilla frutescens</i> var. <i>acuta</i> *, <i>Polygonatum odoratum</i> var. <i>pluriflorum</i>	-	<i>Codonopsis lanceolata</i> *, <i>Colocasia esculenta</i> L., <i>Daucus carota</i> *, <i>Perilla frutescens</i> var. <i>acuta</i> *, <i>Petasites japonicus</i> *,	<i>Achyranthes japonica</i> *, <i>Physalis alkekengi</i> var. <i>francheti</i> *	<i>Achyranthes japonica</i> *, <i>Arctium lappa</i> *
Calm (平)					

Note. The crop with the asterisk has multiple tastes or multiple properties.

Daucus carota var. *sativa*, *Perilla frutescens* var. *acuta*, and *Petasites japonicus* were found to have a spicy taste. Two crops including *Achyranthes japonica* and *Physalis alkekengi* var. *francheti* were found to have a sour taste, and *Achyranthes japonica* and *Arctium lappa* were found to have a bitter taste (Table 5). These results coincided with the findings of Cha et al. (2006). The properties (cold, warm, clam) of the selected crops were evenly distributed, and there was no crop that was hot and cool. In addition, the number of crops that have a sweet taste was the highest, followed by spicy and bitter, but there was no vegetable that has a salty taste (Table 5).

Conclusion

Recently, as healthy city, aging-friendly city, safe city and happy city are selected as a future keyword about city, the importance of urban agriculture has been highlighted as a mean to facilitate interactions and create mutually cooperative relations between neighbors, to improve the health of individuals and their quality of life and to form families and communities (Lim, 2017).

Vegetables recorded in *Imwongyeongjeji* (林園經濟志)-*Gwanhyuji* (灌畦志) were examined, and the following crops were selected: crops that have traditionality (nativeness) and reflect the philosophy of Silhak, a Korean Confucian

social reform movement in late Joseon that put people's livelihood first; crops that have historic values (historicity) such as those that were passed down orally or as a myth; and crops that have health functionality required in modern society and popularity. As a result, a total 53 crops were finally selected out of 128 vegetables. The properties (cold, warm, clam) of the selected crops were evenly distributed, and there was no crop that was hot and cool. In addition, the number of crops that have a sweet taste was the highest, followed by spicy and bitter, but there was no vegetable that has a salty taste, which can be attributed to the fact that 12 namuls that grow in seas were excluded in this study since they were not suitable for urban gardens.

This study suggested 53 crops that show the philosophy of Yaksikdongwon (藥食同源) through which our ancestors made efforts to control vital functions for healthy life through foods and medicinal plants and to promote health and prevent diseases through food intake. The selected crops are also expected to contribute to meeting urban residents' intellectual curiosity by planting them in vegetable gardens with humanistic themes and expanding the base for the growing demand for urban agriculture depending on the characteristics of urban residents. At the same time, through humanistic urban agricultural activities, people can restore the value of labor in daily life, and enjoy social and physical effects among multiple benefits of urban agriculture.

As a content resource in the era of cultural consilience and convergence, humanities can be applied to urban agriculture, which can transform urban vegetable gardens that focus on primary production and secondary consumption activities into a new resource that offers educational and traditional values as one of the fourth industries. It will be also possible to satisfy urban residents' intellectual and participatory needs and enhance the diversity and utility of urban vegetable gardens by developing and distributing models that incorporate traditional knowledge as a historical and cultural resource. It is expected to lead the findings of this study into new types and models of urban agriculture that urban residents can enjoy in reality.

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