

# Analysis of Spatial Feature of Korean-Chinese Traditional Courtyards in Yanbian Korean Autonomous Prefecture of China from the Perspective of “Ecological Wisdom”

Yan Zhou<sup>1,2</sup>, Lei Fan<sup>1,2,\*</sup>

First author's e-mail: zhouyan@syau.edu.cn

\*Corresponding author's e-mail: fanlei@syau.edu.cn

<sup>1</sup> Forestry College, Shenyang Agricultural University, Shenyang 110161, China;

<sup>2</sup> Key Laboratory of Northern Landscape Plants and Regional Landscape (Liaoning Province), Shenyang 110161, China

**Abstract.** Korean-Chinese residing in the Yanbian Korean Autonomous Prefecture are highly dependent on natural resources. They have developed their own beliefs, customs, traditional knowledge and ecological wisdom, which have allowed them to conserve traditional courtyards. The traditional courtyard reflects the Korean-Chinese habits of using forest resources and the production of rice farming. It is considered the most distinctive Korean-Chinese symbol. The present study was carried out in the Yanbian Korean Autonomous Prefecture of China, which is known for their rich folk culture. The study aimed to investigate and document the spatial feature of the Korean-Chinese traditional courtyard in the area, so as to obtain a model of ecological wisdom of indigenous people in maintaining environmental sustainability. Furthermore, seven villages from the study area were selected, covering a sample of 70 traditional courtyards using field method, participatory rural appraisal and semi-structured interviews. The results show that the Korean-Chinese traditional courtyard has four courtyard layout forms, nine structural landscape elements and six living landscape elements. Of the total traditional courtyards, the Style 1 layout is the most used in the Korean-Chinese traditional courtyard. The results of the study can provide basis for the management and protection of the Korean-Chinese traditional courtyard and the sustainable development of ecological environment in Korea-Chinese, and lay a foundation for the follow-up research.

**Keywords:** Ecological wisdom, Korean-Chinese, Spatial feature, Traditional courtyard

## 1 Introduction

The Korean ethnic group is one of the 55 ethnic groups in China, with a population of 1.83 million[1]. Moreover, it is the 13th largest ethnic group in the country. They mainly live in the three provinces of Heilongjiang, Jilin and Liaoning. Approximately 750,000 Korean-Chinese reside in the Yanbian Korean Autonomous Prefecture (Yanbian area) of Jilin Province, which accounts for nearly half of Korean-Chinese population[2]-[4]. The Korean-Chinese of the Yanbian area have relied on their own ecological wisdom to build traditional wooden houses and courtyards by using natural resources, such as wood, straw and stones[5]. In the traditional

courtyard, Korean-Chinese carry out productive daily activities, such as eating and living, growing vegetables, making pickles, drying crops, storing food and organising farming tools. To meet the needs of farming activities and daily life better, the Korean-Chinese built various structures, such as warehouses, cattle barns and grain silos in their traditional courtyards. In addition, these residents also hold a variety of folk cultural activities with rich traditional knowledge in the traditional courtyard. The landscape of the Korean-Chinese traditional courtyard in the Yanbian area is the crystallisation of the collective ecological wisdom and talent of the Korean-Chinese[6]. Given the influence of socio-economic development, new factory-produced building materials have been replacing the natural materials that the Korean-Chinese have traditionally used. In addition, modern mechanical farming tools have taken over traditional homemade farming methods. A large number of rural people have relocated, thus leading to the abandonment or neglect of several traditional courtyards. The national characteristics of traditional courtyards and residential buildings have also gradually disappeared. As a result, the traditional courtyard cultural landscape of the Yanbian Korean ethnic group has lost its necessary living environment. Moreover, no assurance can be established as to whether this traditional information will be transmitted between generations[7]. The inheritance of Korean-Chinese traditional productive skills and folk culture is facing a huge crisis.

At present, research on Korean-Chinese traditional courtyards has mostly focused on the single material form or cultural characteristics of residential buildings and decorations[8]. Zhou analysed the structure and construction process of Korean-Chinese residential buildings[9]. Meanwhile, Jin explored Korean-Chinese buildings and residential culture[10]. In another study, Jin and Zhang analysed the sleeping and living behaviours of the Korean-Chinese and the evolution process of the use of each functional room in the residential building[11]. Jin examined the spatial characteristics of Korean-Chinese residential buildings in various regions and different origins[12]. Furthermore, Du concluded and put forward the aesthetic characteristics of the architectural culture of Korean-Chinese folk houses [13]. In summary, the spatial feature of the Korean-Chinese traditional courtyards in the Yanbian area, traditional use and management methods and other ecological wisdom aspects remain unstudied.

As the carrier of the traditional Korean-Chinese culture, the Korean-Chinese traditional courtyard is crucial for the inheritance of traditional culture and ecological wisdom. The research takes the traditional Korean-Chinese villages of the Yanbian area as the research object and conducts an overall analysis of its traditional courtyard spatial feature. The traditional courtyard landscape layout and the composition of landscape elements are systematically organised and analysed. The ecological wisdom contained in the landscape elements of the traditional courtyard are brought forward to provide reference for the management and protection of the traditional courtyard landscape and the sustainable development of the ecological environment.

## **2 Materials and methods**

### **2.1 Study area**

The present study was carried out in the Yanbian Korean Autonomous Prefecture of Jilin Province. The study area lies between 42°50'N to 43°23'N latitude and 129°01'E to 129°48'E longitude. It is the largest prefecture-level settlement in China for Korean-Chinese residents,

with a total area of 43,474 square kilometers[14]- [16]. The forest coverage rate is high, the water resources are abundant, and the four seasons are distinct[17]. Numerous traditional Korean-Chinese villages are found along the Tumen River. Therefore, the study selected seven villages along the Tumen River, which have a long history and are well preserved, including Bailong Village, Hexi Village, Shanghua Village, Fuyu Village, Shengli Village, Riguang Village and Longyuan Village, as the study area (Fig. 1). The researchers of this study selected 10 sample traditional courtyards in each village to conduct field investigations.



**Fig. 1.** — Map of the study area.

## 2.2 Data collection

The research was conducted from June 2019 to May 2020[18]. To explore the ecological wisdom contained in the traditional courtyard of the Korean ethnic group, two research methods were used: field research and personal interviews. The local village chiefs and the village elders helped and led the search for sample traditional courtyards. Priority was given to selecting traditional courtyards that had a long history, were well preserved and had field investigations conducted on them. In-depth interviews were conducted with the village head and residents to understand the ecological wisdom in the traditional courtyard[19]. Therefore, prior informed consent (PIC) was sought from the village chiefs and concerned information providers[20].

Data were collected using field method, participatory rural appraisal (PRA) and semi-structured interviews[21]- [23]. The themes of the interview mainly centred on the two aspects of traditional courtyard information and ecological wisdom. Traditional courtyard information was obtained by recording the year the house was built, the materials used and the sources of the materials used in each structure. Meanwhile, ecological wisdom was gathered by understanding the reasons for the layout of various landscape elements in the traditional courtyard and the usage habits[24]. Then, the changes produced by the traditional courtyard during different agricultural seasons and the influence of folk festival culture on the traditional courtyard

were documented. Through understanding the formation reasons and usage habits of various traditional courtyard components, this study summarised the management techniques and ecological wisdom contained in each element of the traditional courtyard[25].

### 3 Results and analysis

#### 3.1 Layout of the traditional courtyard

The traditional courtyard of the Korean ethnic group is centred on houses, equipped with auxiliary buildings and structures and surrounded by walls; in addition, the outer contours are mostly rectangular (Fig. 2). The design presents the internal landscape of the traditional courtyard with a general uniformity and varying details. The traditional courtyard layout is roughly divided into four traditional courtyard layout types (Fig. 3).

The layout form of 70 households in the survey was summarised. A total of 53 households are in the Style 1 layout, nine households are in the Style 2 layout, five households are in the Style 3 layout, and three households are in the Style 4 layout. The Style 1 layout is the most traditional and most used layout form in the Korean-Chinese traditional courtyard. The other layout forms evolved from the Style 1 layout. Therefore, the main landscape layout form is consistent, and the Korean-Chinese traditional courtyard layout style with a flexible combination of subsidiary landscape elements is formed. The main spatial setting of the traditional courtyard can be divided into three parts: the entrance of the traditional courtyard, the land in front of the house and the land behind the house. The traditional courtyard has proper sunshine space in the longitudinal direction, and the opening layout avoids the northwest wind in winter. The main entrance and exit of Korean-Chinese dwellings are located in the south, but not in the centre of the traditional courtyard, to ensure the use of the front of the traditional courtyard house. Given that traditional courtyards are mostly situated north facing south, the gate is on the south side. To facilitate traffic, most of the main roads in the village are parallel along the east-west direction. This orientation saves land and avoids unnecessary earthwork volume when building houses. The land in front of the Korean-Chinese dwellings is mainly used for vegetable patches, and space is allotted for agricultural tools and structures, such as livestock houses near the fence. In general, families with larger populations have more arable land and more types of farming tools. Hence, more storage space and traditional courtyard space are needed. The backyard area of Korean-Chinese dwellings is relatively small. This portion is mostly used to grow commonly eaten fruits. Toilets are mostly set up in the corners of the backyard near the wall. The factors that have a direct impact on the layout of the Korean-Chinese traditional courtyard mainly come from the family population, economic conditions and the area of arable land. The indirect impact mainly comes from the living habits of residents, the number of livestock and the road conditions around the traditional courtyard.

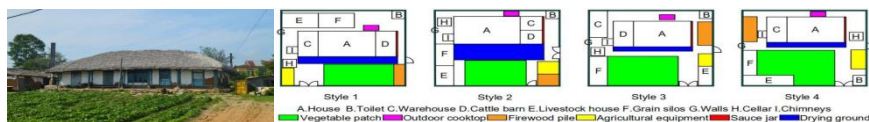


Fig. 2. — Korean-Chinese traditional courtyard.

Fig. 3. — Korean-Chinese traditional courtyard layout.

## **3.2 Architectural landscape elements**

### **3.2.1 House**

The house is an important element in the Korean-Chinese traditional courtyard. Korean-Chinese houses are low and are mainly white and yellow. According to the form of roofing material, the dwellings have three types of roofs, namely, thatched roof (38 households) (Fig. 4a), tile roof (18 households) (Fig. 4b) and coloured steel roof (14 households) (Fig. 4c).

The height of the thatched roof is close to half of the height of the entire building. Moreover, straw is the traditional roofing material used. To prevent the wind from blowing away the straw on the roof, straw ropes are woven horizontally and vertically to form a grid to enclose the entire roof. The ends and ridges of the eaves are pressed with wooden rods to make them stronger. As a result, an ecological roofing system based on thatched roofs has been formed. It has the advantages of convenient material acquisition, simple structure and easy construction. The disadvantage is that the replacement frequency of straw is relatively fast, and some straws even need to be replaced every year. The tile roof has good waterproofing and insulation performance, and the appearance is beautiful. Tile roof houses are generally paved with grey-black terracotta or red terracotta in the Xieshan style. The tail of the positive ridge is superimposed with tiles, which are slightly tilted. Hence, the ridge has a curvature and presents an upward curve. The coloured steel roof is low cost, easy to maintain and has good waterproofing performance and wind resistance. It is a common roof material used in the renovation of old houses and newly built houses. Although new materials are used, the structures have still retained the traditional roof landscape style.

Winter in the Yanbian area is cold and long. Korean-Chinese houses use a heating method known as ondol, which directly influences the low shape of Korean-Chinese houses. Single elements, such as walls, doors and windows, are also present in the external structure of Korean-Chinese houses. The Korean-Chinese have admired white since ancient times. Thus, they painted the walls white with white ash and then divided the walls with the colour of the exposed timber structure supporting the house. As a natural building material, straw can be mixed with loess and can be used for roof insulation, reinforcement and waterproofing. It can also be tied to the wooden frame of the wall and used as a partition wall. The doors and windows of Korean-Chinese houses are single leaf. The door panes are mullioned, and white paper is pasted inside. Some residents also use sesame oil or other vegetable oil to coat the paper to increase the brightness of the room and strengthen the waterproof and moisture-proof performance of the door and window paper. This process extends the service life of the door and window paper. The doors and windows have a special small window to allow the master sitting on the kang to see things outside and to know the visits of the guests. The small windows and the colonnades embellish the unique nationality of the traditional Korean architecture.

### **3.2.2 Toilet**

Generally, the toilet is arranged in the corner of the backyard close to the wall. Alternatively, it can be arranged on the right side of the house or close to the livestock pen, which is a more private portion. Among them, single-pit dry toilets are mainly used, with an external size of approximately 1\*1\*1.8 m, divided into two forms, namely, the earth pit (31 households) and the brick pit (39 households). The external form is made of wooden boards as the main struc-

ture, and the straw curtains are fixed with wooden sticks to form the outer surface of the toilet, which play a role in sheltering wind and rain (Fig. 5a). This type of toilet does not use water. Hence, its advantage is that it does not require a purification tank, and the waste can be used in the field after fermentation. Given the four distinct seasons in the Yanbian area, the toilet becomes too cold to use in winter, and maggots are prone to grow in it in summer. Furthermore, the faeces cannot be cleaned in time, thus producing a pungent odour. Some homes are equipped with exhausts in the toilet, which not only facilitates the disposal of faeces but also considerably reduces the smell. In addition, during the research, the 27 Korean-Chinese traditional courtyards were found to have gourds planted next to the toilets so that these fruits could grow on the toilets. Interviews with the head of the household revealed that in Chinese, gourd and fulu are homophonic stands for good fortune. The practice of 'throwing a gourd and a ladle' is an important part of Korean-Chinese weddings, and growing gourds represents people's hope for a better future.

### **3.2.3 Warehouses**

The Korean-Chinese are good at using warehouse space and storing the accumulated living materials in the warehouse to organise the traditional courtyard in a more orderly and efficient manner. The warehouses are divided into an indoor warehouse and an outdoor warehouse. The location has 43 indoor warehouses, 61 outdoor warehouses and 34 indoor and outdoor warehouses. Indoor warehouses are generally set up on the side of the house next to thatched houses or a cattle barn. They are mainly used for storing daily food, cooking utensils and other relatively clean household items. It can also form a 'double-walled' space for wind protection, heat preservation and cold protection. The outdoor warehouses are all built on walls (Fig. 5b). The construction materials are mainly trunks, planks and straws. Nails or straw ropes are used to secure the tree trunks to make warehouse walls. The branches are arranged horizontally and vertically to form a window. In some instances, these warehouses have no windows. The roof is covered with straw curtains and tied to the trunk with straw ropes. These structures have simple doors, which are mainly composed of wooden boards or old doors in the home. The area varies from 10 – 30 m<sup>2</sup>. Outdoor warehouses are mainly used to store some living sundries and materials that are not too harsh on the storage environment to prevent the weather from corroding objects.

### **3.2.4 Cattle barn**

Cattle are the main labour force in the cultivation process. The cattle barn was built to prevent loss of cattle and illness due to weather. Ten households set up cattle barns on the side of the house, 31 households abandoned or converted the cowshed on the side of the house into a thatched house or warehouse, and 29 households had cowsheds built on traditional courtyard walls. The cattle barn of the house has an area of more than 30 m<sup>2</sup> (Fig. 5c). Generally, a barn has two doors. One small door was for people to go in and out to feed cattle. Meanwhile, the other door is large, which allows cattle to come and go easily. The cattle barn in the house is usually set next to the hayloft. When a house has no hayloft, the barn is located near the kitchen instead. The cattle barn and the warehouse are connected by a small window, which is convenient for people to feed the cows in the warehouse. In addition, a passage connects the cattle barn and the internal space of the building to prevent cattle from being lost and sick. The 'double-walled' space between the house and the cattle barn can also effectively keep out the

cold. In Korean-Chinese custom, if a child is born in the family of a fellow Korean-Chinese, the man of the family will carry the newborn child to the cattle barn and shout, 'The cowboy is out!' as a way to bless the child.

### **3.2.5 Livestock house**

The main types of livestock raised by the Korean-Chinese are chickens, geese, dogs and pigs. A total of 56 families raise chickens, 32 families raise geese, 41 families raise dogs, and 33 families raise pigs. In addition to its high economic value, raising livestock can also guarantee the daily supply of eggs and meat. The livestock house is usually made of wooden boards with a wooden door (Fig. 5d). To avoid affecting the air in the living area, more livestock houses are placed in areas where the traditional courtyard falls in the direction of the wind. To regulate the temperature of the livestock house, it is usually arranged on the sunny side of the front traditional courtyard. Pig pens are generally covered in the corners of the front traditional courtyard far away from the interior due to the strong smell. Some of the chicken coops are built in a warehouse connected to the main house, and some are built at the root of the south wall of the main house. Meanwhile, dog kennels are generally built at the root of the south wall of the main house or in front of the warehouse next to the main house, thus situating dogs to a location that would allow them to guard the house effectively.

### **3.2.6 Grain silos**

Korean-Chinese crops include rice, corn and potatoes. The grain harvested in autumn and the grain used in daily life need to be stored in grain silos. A total of 56 traditional courtyards were equipped with building type grain silos for storing grain after drying (Fig. 5e). Households without granaries generally store packaged food in warehouses or indoors. To ensure that the grain is ventilated and dry, it is generally arranged in a ventilated place on the sunny surface of the front yard. The amount of grain storage directly determines the food and clothing of the whole family. Given the short fence, the grain silo has a lot to do with the external image of the family. A grain silo that is full of grain indicates that the family is wealthy. Thus, the existence of a granary is crucial. The traditional Korean-Chinese building-style granary is made of trunks and straw. The tree trunks are nailed by wooden boards, straw curtains are laid on the ceiling, and iron doors are provided. The grain silos are positioned approximately 40 cm from the ground to prevent rats and livestock from stealing and spoiling food. This location also prevents the storage from being too close to the ground to dampen grains. Wide gaps or the absence of a top cover on the surrounding silo walls facilitates ventilation. Some farmers also enclose the lower space of the grain silos with wooden and stone walls. A small door is placed in front of the area for storing sundries, thus creating a two-storey grain silo.

### **3.2.7 Walls**

The walls are divided into three types: wooden walls (38 households) (Fig. 6a), stone pile walls (16 households) (Fig. 6b) and iron fence walls (16 households) (Fig. 6c). The Korean-Chinese traditional courtyards generally do not build high walls. The wooden wall is woven with wooden stakes and wicker. The materials are wooden boards and twigs, and the height is approximately 150 cm. Some shattered tiles or stones are used to build a low wall that is less than one meter high. The top of the wall is covered with bricks or straw. Meanwhile, the iron fence wall is welded by iron rods, and the exterior is sprayed with colourful paint. The inside

of the traditional courtyard can be clearly seen through the wall. The overall boundary is not clear, and the inside and outside portions are transparent. These features characterise the Korean-Chinese traditional courtyard wall. Residential road walls are generally made of adobe masonry, and a few pieces of rubble are placed on them. They not only prevent rain from getting wet, but houses, warehouses and walls are also integrated through tiles. The gate is not located directly in front of the traditional courtyard. Instead, it is often situated on the side of the traditional courtyard close to the house. If the front of the traditional courtyard is close to the avenue, double doors are added for large vehicles to enter and exit but not for people.

### **3.2.8 Cellar**

The cellar is an underground landscape unique to the Korean ethnic group. It is generally placed on the shade of a traditional courtyard with a diameter of 50-70 cm and a depth of 4-6 m at the bottom of the well (Fig. 5f). Affected by the cold climate and eating habits, Korean-Chinese often prepare to store ingredients for the winter in autumn. These ingredients include spicy cabbage, cold noodles, pickles, steamed buns, cabbage, potatoes, frozen pears, onions, dried fish and tofu. A total of 51 households have traditional facilities, such as a cellar. Meanwhile 29 households have replaced cellars with refrigerators due to their relatively short installation period. Given that the cellar goes deep underground, it maintains a low constant temperature almost all year round. The storage time and fresh-keeping cycle of the food stored in the cellar can be longer, and it is not prone to spoilage and rot.

### **3.2.9 Chimneys**

The daily life of the Korean-Chinese is inseparable from cooking and heating. Hence, the chimney is a necessary element of the traditional courtyard. Traditional Korean-Chinese houses use freestanding chimneys, which exist independently of the main body of the house. Among the 70 Korean-Chinese traditional houses visited and studied, 49 households used wood panel chimneys (Fig. 7a), and 21 households use log chimneys (Fig. 7b).

Log chimneys mostly use wind-fallen wood. The core of the withered log is hollowed out. Then, the log is made into a wooden pipe to stand on the ground. It is slightly higher than the roof of the house and connected to the flue at the bottom. The chimney is close to the environment and is completely integrated with other natural materials of the house. The wood panel chimney is made of planks to form a long square tube. Usually, 2-cm thick and 25-cm wide wooden boards are used to form a square tube. The size is approximately 25×25 cm, and the vertical space is approximately 1 m tied with iron wire or wooden strips up to the ridge of the house. The location is on the side of the house hill, standing upright on the ground. The distance from the outer wall is generally 0.6-0.7 m, and the height is 4.5-5.5 meters. A square or round base is made at the bottom of the chimney to connect with the flue lying underground. This chimney is simple to manufacture, and the material is convenient.





**Fig. 4.** — Houses. a. Thatched roof house. b. Tile roof house. c. Coloured steel roof house.



**Fig. 5.** — Architectural landscape elements. a. Toilet. b. Warehouse. c. Cattle barn. d. Livestock house. e. Grain silos. f. Cellar.



**Fig. 6.** — Walls. a. Wooden walls. b. Stone pile walls. c. Iron fence walls.



**Fig. 7.** — Chimneys. a. Wood panel chimneys. b. Log chimneys.

### **3.3 Living landscape elements**

#### **3.3.1 Vegetable patch**

The vegetable patch in the Korean-Chinese traditional courtyard is the landscape element with the largest area and the most flexible form in the traditional courtyard (Fig. 8a). Among the 70 traditional courtyards visited, the vegetable patch area accounted for more than 50% of 24 traditional courtyard areas, 40% to 50% of 30 traditional courtyard areas, 30% to 40% of 13 traditional courtyard areas and less than 30% of three traditional courtyard areas. The vegetable patch is an important part of the Korean-Chinese traditional courtyard. Moreover, people mainly plant vegetables on this space. The choice of plants for Korean-Chinese vegetable patches is influenced by several factors, such as kimchi culture, food therapy culture, drying culture and the eating habits of the residents. Vegetables, such as *brassica pekinensis*, *capsicum annuum*, *perilla frutescens*, *platycodon grandiflorus* and *raphanus sativus*, can be found in the vegetable field. As a result, the vegetable patch of the Korean-Chinese traditional courtyard forms an internal spatial pattern with broadly similar but different planting varieties.

#### **3.3.2 Outdoor Cooktop**

The outdoor cooktop is the embodiment of the unique Korean-Chinese cooking culture. A total of 61 traditional courtyards have outdoor cooktops, while the other nine traditional courtyards without outdoor cooktops all have newly built cooking setups that were installed after 2000. These new installations are mainly due to the popularity of modern household appliances, which have reduced the use of cooktops for cooking. Outdoor cooktops are mostly brickwork, with a rectangular parallelepiped shape and a stove pit at the bottom. A cooktop is installed on the top, and pots and pans are placed on the stove (Fig. 8b). Generally, cooktops are placed in the backyard of the traditional courtyard, while a few are placed in the shade of the traditional courtyard. The traditional cooktop is connected to the *ondol* indoors, which raises the temperature inside the house. Meanwhile, the outdoor cooktop is mainly used for cooking rice and soup as well as cooking mountain vegetables in summer. At the same time, a large pot is set up to cook feed for cattle and pigs.

#### **3.3.3 Firewood pile**

Firewood for burning is an essential and important material in the daily lives of the Korean-Chinese. Furthermore, this material is collected as firewood piles in homes. Fifty-eight households place their firewood piles outdoors (Fig. 8c), and 12 households store their firewood in warehouses in the traditional courtyard. Their choice of storage depends on the farming area in the family and the size of the house. Families with a small farming area accumulate relatively little firewood. Thus, a small amount of firewood is placed in the structures in the traditional courtyard. Households with larger house sizes have a greater demand for heat. Thus, the amount of firewood in the firewood pile is larger. Korean-Chinese firewood piles are made up of wood, branches, straw and pine needles. The pine needles are stored in a nylon bag and are mainly used for the ignition of the *ondol* and the cooktop. Straw and planks are used in the subsequent burning process, which is not only economical but also the best way to remove them. The top layer of the straw firewood pile is covered by straw curtains, pressed with bricks or boards. The setup serves as a windbreaker to prevent the firewood pile from being blown apart by bad weather.

### **3.3.4 Agricultural equipment**

The traditional Korean ethnic group is mainly engaged in farming. After the farming activities, arranging agricultural equipment in the traditional courtyard is an indispensable step. Large agricultural equipment, such as cattle ploughs, are usually placed in the farming tool shed in the traditional courtyard. A total of 48 residential houses are equipped with storage space for agricultural equipment. Usually, Korean-Chinese use nails or wedges on the exposed wooden walls of the house or the wall of the farming tool shed, and they hang some farming tools on the wall to save and use the limited space (Fig. 8d). The agricultural equipment is stored close to the gate for easy access. The agricultural instruments that Korean-Chinese use are mostly made of wood and iron. As they have lived in homes with *ondol* since childhood and are accustomed to sitting or squatting to work, most of the daily agricultural implements are very short, only as long as the arms.

### **3.3.5 Sauce Jar**

The sauce jar is the main container for the Korean-Chinese to make soybean paste and kimchi (Fig. 8e). Fifty-one families place their sauce jars in the middle of their traditional courtyards. The surface of the Korean-Chinese sauce jar is dark, and the lid is covered with white cotton cloth and tied with a red rope. These aspects form the unique characteristics of the Korean-Chinese sauce jar. In addition to soy sauce jars, jars used for other purposes, such as making kimchi, are also placed on top. In the traditional courtyard, some families have been influenced by early shamanism and use traditional dyes to draw facial makeup and other patterns on the sauce jars to portray beautiful meanings. Given that the Korean-Chinese have a habit of eating sauce, soybean paste is used to make sauce soup, wrapped rice and other dishes. Evidently, making sauce is a necessary part of Korean-Chinese households every year. Initially, they put the prepared sauce blanks into the sauce jar and add the brine. Afterwards, they pound the sauce twice a day with no less than 200 strokes each time, which is a crucial part of the process of making sauce. It determines the degree of fermentation of the sauce, which directly affects the taste and quality of the sauce. A location with low ambient temperature is not suitable for the fermentation process of sauce paste. Therefore, people position sauce jars in areas that are easily accessible and have sufficient sunlight.

### **3.3.6 Drying ground**

The drying ground is a field used to remove moisture from food, such as grains and vegetables. It is generally arranged in the open area on the south side of the house to facilitate the drying of food (Fig. 8f). Korean-Chinese go up the mountain to pick a plentiful stock of hazel mushrooms after the rainy season. They keep a portion of these mushrooms as fresh food, while the rest are dried and preserved in the drying ground. The dried hazel mushrooms are used to fry yellow beef or stewed chicken, which are common dishes of the Korean-Chinese. Much of the kimchi that Korean-Chinese like to eat consists of foods that need to be dried, such as cabbage and radishes. Dried food should not be too close to each other when it is aired. If the distance is too close, it will attract a lot of bugs, or the water will not spread completely and cause rotting. Therefore, the straw roof and the open space in front of and behind the house are used as drying spaces. In addition to roofs, vegetable gardens and traditional courtyards, the walls of houses are also good places to dry food. Chilli is the most commonly used vegetable to dry on the wall. The Korean-Chinese diet is generally spicy, and eating

spicy food can effectively increase the body temperature and remove the cold. In addition to drying hot chillies, the Korean-Chinese fix garlic, fish and other foods on straw ropes and hang them on the walls. The wall drying method has formed the unique drying culture of the Korean traditional courtyard.



**Fig. 8.** — Living landscape elements. a. Vegetable patch. b. Outdoor cooktop. c. Firewood pile. d. Agricultural equipment. e. Sauce jar. f. Drying ground.

#### 4 Conclusion

The study results serve as a record for traditional practices and ecological wisdom by the indigenous people, which otherwise might have been lost. The survey of the research reveals that the traditional courtyard landscape elements of the Korean ethnic group are mainly composed of structural landscape elements (nine types) and living landscape elements (six types). The general layout form of four representative Korean-Chinese traditional courtyard landscape elements was determined.

The ecological wisdom and spatial feature of the Korean-Chinese traditional courtyard are important parts of the Korean-Chinese life that guide the sustainable utilisation of natural resources. In the future, the landscape development of Korean-Chinese traditional courtyards should be endowed with new functions and should enhance the vitality of the traditional courtyard. The traditional courtyard landscape related to ethnobotany deserves to be studied as well.

#### 5 The source of the topic

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