

The Introduction and Spread of Pumpkin in China¹

Li Xinsheng 李昕升², Wang Siming 王思明³

(Institution of Chinese Agricultural Civilization, Nanjing Agricultural University, Nanjing 210095, China)

Abstract: Pumpkin is native to the Americas. According to local gazetteers, it was introduced to China's southeastern coastal areas and southwestern frontiers in the early sixteenth century, and rapidly spread nationwide as a crop serving as both vegetable and staple. By the end of the Ming dynasty it had spread to most provinces of China, reaching nationwide distribution during the Qing. During the Republic of China in the first half of the twentieth century, high-caliber breeds became more widely known, with cultivation particularly flourishing in Sichuan Province and across North China. It had significant impact on the rural economy, resulting in changes in the planting system, the relief of famine, and the enrichment of the practice of traditional Chinese medicine.

Keywords: pumpkin, introduction, spread, influence

Native to the Americas, the scientific name for *nangua* 南瓜 (pumpkin) is *cucurbita moschata* (Duch.), and its common aliases include *wogua* 倭瓜 (cushaw), *fangua* 番瓜 (foreign squash), *jingua* 金瓜 (golden melon) and *fangua* 飯瓜 (rice melon). It is an important crop in China, where it has been cultivated for around 500 years, serving as both vegetable and staple. It is highly adaptable to environments, and is grown across the country with high yield per unit and high output. Besides being an important famine-relieving summer-fall cucurbitaceous vegetable, pumpkin can also be used as fodder and an ingredient in Chinese herbal medicine (Li et al. 2014; Li and Lu 2017).

Despite being the world's largest consumer and grower of pumpkin (Li et al. 2014),

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² Research interest: History of agriculture. Email: lixinsheng@njau.edu.cn

³ Research interest: History of agriculture. Email: icac@njau.edu.cn

little research has been conducted on its history in China. Some scholars have studied the world history of pumpkin (Zhang 2010), and others have researched when pumpkin was introduced to China (Li et al. 2013). Few, however, have covered the introduction and spread of pumpkin throughout China. Based on Chinese local gazetteers and literary jottings of the Ming and Qing dynasties and the Republic of China, this paper focuses on the introduction and spread of pumpkin throughout China, and analyzes the influence of this spread from the perspectives of historical geography and history of science and technology.

1 The timing of the introduction of pumpkin into China

Currently, the earliest record of pumpkin in China is found in the late Yuan dynasty work *Yinshi xuzhi* 飲食須知 (Essentials of diet) written by Jia Ming 賈銘: “If they eat too much pumpkin, which is sweet and warm, people will get beriberi and jaundice, and eating with mutton causes flatulence. It must not be eaten with pork liver, red bean and buckwheat noodles” (Jia [before 1368] 1988). It can also be found in the early Ming dynasty *Diannan bencao* 滇南本草 (Materia medica of south Yunnan) written by Lan Mao 蘭茂 (1397–1476): “As for pumpkin, also called *mai gua* melon 麥瓜, the flavor is sweet and plain and its character is slightly cold” (Lan [before 1556] 1959).

It is generally acknowledged that having been an important food plant in the Americas, pumpkin was distributed worldwide after Columbus reached the New World in 1492, together with other American crops, such as sweet potato and corn. However, the above-mentioned two books were first written prior to 1492, so it is suspected that these references to pumpkin were added into later editions.⁴

There is no incontrovertible record of pumpkin cultivation prior to the time of Columbus in other existing historical materials in China, and no wild species of pumpkin can be found in China, which indicates that it was certainly introduced from abroad. According to historical materials, such as local gazetteers, pumpkin was first introduced in the early sixteenth century via coastal areas and the southwestern frontier region. Local gazetteers are vital for researching the introduction and spread of the pumpkin across China since the Ming dynasty. Table 1 is based on these sources.

Compared with other American crops, the most outstanding characteristic of the introduction and spread of pumpkin in China is that it was basically introduced in the Ming dynasty, with the exception of a few provinces. The earliest provincial records about pumpkin were mostly written in the mid-to-late sixteenth century. Four provinces—Fujian, Guangdong, Zhejiang and Yunnan—record pumpkin before the 1560s, Fujian as early as 1538. Records in local gazetteers are certain to lag behind the

⁴ For details, see Li et al. 2013. According to the authors’ research, purely from the point of view of textual research, it cannot be ruled out that these records were added by later generations.

actual initial time of cultivation, and therefore it is highly likely that pumpkin was introduced in the early sixteenth century.

Table 1 Earliest Provincial Records of Pumpkin

Province	Earliest Record	Source	Province	Earliest Record	Source
Fujian	1538	<i>Gazetteer of Funing Subprefecture</i> chap. 3	Hunan	1597	<i>Gazetteer of Chen Subprefecture</i> chap. ?
Guangdong	1545	<i>Gazetteer of Xinning County</i> chap. 5	Guizhou	1612	<i>Gazetteer of Tongren Prefecture</i> chap. 3
Zhejiang	1551	<i>Gazetteer of Shanyin County</i> chap. 3	Ningxia	1617	<i>Gazetteer of Shuofang County</i> chap. 1
Yunnan	1556	<i>Illustrated Materia medica of south Yunnan</i> chap. 8	Gansu	1667	<i>Gazetteer of Zhuanglang County</i> chap. 3
Anhui	1564	<i>Gazetteer of Bo Subprefecture</i> chap. 1	Guangxi	1673	<i>Gazetteer of Yangshuo County</i> chap. 2
Henan	1564	<i>Gazetteer of Deng Subprefecture</i> chap. 10	Liaoning	1677	<i>Gazetteer of Tieling County</i> chap.1
Jiangxi	1565	<i>Gazetteer of Jing'an County</i> chap. ?	Hainan	1690	<i>Gazetteer of Ding'an County</i> chap. 1
Shandong	1565	<i>Gazetteer of Qingzhou Prefecture</i> chap. 7	Taiwan	1717	<i>Gazetteer of Zhuluo County</i> chap. 10
Hebei	1565	<i>Gazetteer of Gu'an County</i> chap. ?	Xinjiang	1772	<i>Gazetteer of Xinjiang</i> chap. 2
Shanxi	1568	<i>Gazetteer of Xiangling Country</i> chap. ?	Heilongjiang	1810	<i>Gazetteer of Heilongjiang Province</i> chap. 8
Jiangsu	1569	<i>Gazetteer of Danyang County</i> chap. 2	Inner Mongolia	1859	<i>Gazetteer of Gufeng Prefecture</i> chap. 39
Sichuan	1576	<i>Gazetteer of Yingshan County</i> chap. 3	Jilin	1885	<i>Gazetteer of Fenghua County</i> chap. 11
Hubei	1578	<i>Gazetteer of Yunyang Prefecture</i> chap. 12	Qinghai	1945	<i>Gazetteer of Qinghai Province</i> chap. 5
Shaanxi	1591	<i>Gazetteer of Qishan County</i> chap. ?	Tibet	Unknown	Unknown

Note: Hebei includes Beijing and Tianjin; Sichuan includes Chongqing; Jiangsu includes Shanghai.

Fifteen provinces record pumpkin as early as the sixteenth century. Among these fifteen, Fujian, Guangdong, Zhejiang, Jiangsu and Shandong are eastern and southeastern coastal provinces; Hebei is a coastal province in North China; Anhui and

Jiangxi are further inland in Central China; Yunnan is at the southwest frontier; Henan, Shanxi, Sichuan, Hubei, Shaanxi and Hunan are well inland in North and Central China. The earliest records of pumpkin in Fujian and Yunnan only differ by 18 years. If it was introduced via one route only, it is impossible for it to have spread to two places so far apart within such a short time, and the earliest records for many provinces situated between Fujian and Yunnan are much later than those for these two.

Local gazetteers were generally compiled under each regnal title of an emperor, and the time intervals between gazetteers were usually not too long. Despite the fact that the time of the records in the gazetteers must postdate the actual time of initial cultivation, this time gap was generally not overlong.⁵ According to these local gazetteers, then, there must have been two routes for the introduction of pumpkin into China. The first is the southeastern sea route, and the second the southwestern land route. The first route is paramount. The southeastern sea route implies that pumpkin was introduced to Southeast Asia first, and then to China's southeastern coastal areas. The southwestern land route implies that it was introduced to India and Burma, and then to the Chinese southwestern frontiers.

The earliest record of pumpkin in the southwestern frontier is found in Lan Mao's *Diannan bencao*, which was first compiled prior to Columbus reaching the New World. Manuscript copies were circulating quite widely by the early Qing dynasty (mid-seventeenth century), and, inevitably, content about the pumpkin was added in Lan Mao's name. The earliest extant copy of this book, the twelve-volume *Diannan bencao tushuo* 滇南本草圖說 (Illustrated materia medica of south Yunnan), found by Fan Xingzhun 范行准, indicates that it was compiled by Fan Hong 范洪 based on the original edition of *Diannan bencao* in the 35th year of the reign of Emperor Jiajing (1556), and it already records pumpkin. Thus, pumpkin must have been cultivated in Yunnan no later than 1556, and was probably introduced from Burma. The Longqing period (1567–1572) *Yunnan tongzhi* 雲南通志 (General gazetteer of Yunnan) and Tianqi period (1621–1627) *Dian zhi* 滇志 (Gazetteer of Yunnan) both have records about pumpkin. In

⁵ A lack of archeological evidence means that only documents can allow us to estimate the earliest time when a certain crop was cultivated in a particular region. Relatively speaking, the time when American crops were introduced to China can be estimated fairly accurately, due to the tradition of compiling local gazetteers during their introduction in the Ming and Qing dynasties. Over 8000 local gazetteers are available to the authors, and are highly significant for determining the time, routes, distribution and spread of the introduction of pumpkin. As the genre developed during this period, minor details were given more attention as compilers widened their scope of content, and introduced style guides, the division of labor and meticulous proofreading and revision. Furthermore, as a fixed section of gazetteers, the "Wuchan" 物產 (Products) section was usually very detailed, and American crops, as novelties, would usually draw the compilers' attention. The increasing frequency of the compilation of new gazetteers also reveals an increase in the "Products" section. Of course, new crops may have been introduced into a region but not recorded immediately, and based on the accessible documents, estimations have not been exaggerated out of rigorouslyness.

Yunnan, pumpkin is always called *Miangua* 緬瓜 (Burmese melon), and this appellation is not found in other provinces: “Pumpkin is also called Burmese melon” (Fan and Tian 1725), “pumpkin came from Burma so we call it ‘Burmese melon’ instead of ‘pumpkin’” (Chen and Li 1895). Yunnan borders Burma, and the trade route between Yunnan and Burma is also known as “the Southern Silk Road,” stretching from Qujing and Kunming in Yunnan in the east, to Dali, Baoshan, Tengchong, Guyong and finally to Burma and on to India. *Dian lue* 滇略 (Overview of Yunnan) depicts the prosperity of the Yunnan-Burma Road: “Between Yongchang and Tengyue, vast expanses of fertile land, which control Burma, are a metropolis” (Xie ca. 1621). The cultivation of pumpkin is also recorded in Burma, though only later, as part of the record of Yunnan magistrate Zhou Yu’s 周裕 expedition to Burma in the 32rd year of the reign of Emperor Qianlong (1767): “the rest of the food includes white gourd, pumpkin, etc.” (Zhou [1790] 2001).

China’s southeastern coastal areas generally have an early record of pumpkin. The earliest is the 17th year of the reign of Emperor Jiajing’s (1538) *Funing zhoushi* 福寧州志 (Gazetteer of Funing Subprefecture), which includes, “there are many kinds of melon, including white gourd, cucumber, watermelon, muskmelon, golden melon and towel gourd” (Chen and Min 1538). “Golden melon” is one of the commonly-used nicknames for pumpkin: “People in South China call it ‘golden melon’ instead of ‘pumpkin’” (Li et al. 1938). Even today pumpkin is still often called “golden melon” in Fujian. “Golden melon” does not always refer to pumpkin, but it means pumpkin here. Another work from the Qianlong period (1736–1795), *Funing fuzhi* 福寧府志 (Gazetteer of Funing Prefecture), says: “Golden melon is sweet, getting red when ripe, and has different forms” (Li 1762). According to this description, it is certainly pumpkin. Apart from this, *Funing fuzhi* of other periods do not include the word “pumpkin,” though it had been introduced to Funing Prefecture and was nicknamed “golden melon,” as Feng Menglong 馮夢龍 records for Shouning County in Funing Subprefecture in the 10th year of the reign of Emperor Chongzhen (1637): “There are towel gourd and cucumber, but pumpkin is the most abundant, called ‘golden melon’ here, red or yellow in color” (Feng [1637] 1983). It is likely that pumpkin was introduced to Zhejiang and Guangdong from Southeast Asia, as the northern Zhejiang plain “introduced pumpkin from the South” (Liu et al. 1638). Guangzhou Prefecture and Zhaoqing Prefecture were among the first to introduce it in Guangdong: “Pumpkin is as big as white gourd, its flesh is firm, and it is from the south” (Lu and Chen 1633). “South,” further south than Guangdong, may indicate the introduction of pumpkin from Southeast Asia, but this data does not necessarily prove that it was introduced from Southeast Asia. However, the southeastern coastal provinces have the earliest records of it nationwide. They also have the largest number of records of pumpkin in the Ming dynasty, so we believe that China’s southeast coastal areas were among the first to introduce it. It is also hard to

imagine that it could have been introduced from routes other than the southeastern sea route, and China's southeastern coastal areas were also among the first to introduce most American crops into China (Ho 1959).

2 The spread of pumpkin in China

Pumpkin exploited its advantages as an alien species to the full, and was even not inferior to local melons. It spread rapidly to the mountainous areas where Guangxi borders Guangdong, such as Jianyang County and Mingxi County. Curiously, at this early time it was used also as an offering to Buddha rather than eaten as a staple, especially in Zhangzhou: "It is round and has some segments and Zhangzhou people use it for offerings to Buddha, but not for food" (Liang et al. 1632). In the Qing dynasty, pumpkin was already everywhere (Li 1683), and in the Qianlong period *Fujian tongzhi* 福建通志 (General gazetteer of Fujian) (1737), ten prefectures record it. In Taiwan, pumpkin is generally called "golden melon," which was mentioned in *Zhuluo xianzhi* 諸羅縣志 (Gazetteer of Zhuluo County): "Golden melon, namely pumpkin, was derived from the South" (Zhou et al. 1717). It is not clear whether pumpkin was introduced from Fujian or by Europeans. It spread fast, and was grown almost everywhere on the island, though especially on Taiwan's western plain, and more sparsely in the eastern mountainous areas.

Pumpkin was introduced early to the coastal areas of Guangdong Province. Xinning County and Xinhui County document "golden melon" in the 24th year of Emperor Jiajing's reign (1545) and the 27th year of Wanli's (1599) reign respectively, and this name was used until the word "pumpkin" emerged during the last years of the reign of Emperor Guangxu (early twentieth century). Neighboring Xiangshan County records: "Golden melon is yellow, popularly named as *fangua* 番瓜 (foreign squash)" (Bao and Li 1750), and the Qianlong period *Zhaoqing fuzhi* 肇慶府志 (Gazetteer of Zhaoqing Prefecture) records: "Pumpkin is also known as golden melon" (Wu and He 1760). All these references prove that golden melon refers to pumpkin in the two prefectures. A record of pumpkin is also found in Fengchuan County, at the junction of northern-most Zhaoqing Prefecture and Guangxi Province. Before the Qing dynasty, pumpkin was mainly concentrated in the prefectures of Guangzhou, Zhaoqing, Gaozhou and Leizhou. Records of it are more abundant during the Qing dynasty, and every coastal prefecture has such records. Pumpkin was also constantly planted inland in Hainan Island from the Kangxi period, though not in large quantities, and there was no exporting of it (Chen and Zeng 1933).

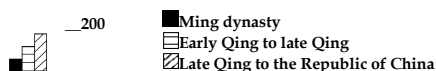
Pumpkin is recorded in Zhejiang Province 21 times during the Ming dynasty, and was widely distributed across prefectures and counties in the plains of east and west Zhejiang. In terms of regions recorded in local gazetteers alone, in the Ming dynasty

pumpkin was most widely distributed in the southeastern coastal areas. It was probably introduced into Wenzhou Prefecture in southern Zhejiang from Funing Prefecture in northern Fujian. In the late Ming dynasty, it spread to Kaihua County, at the junction of Anhui and Jiangxi provinces. The Kangxi period *Dongyang xianzhi* 東陽縣志 (Gazetteer of Dongyang County) records: “The enlisted soldiers took seeds from the border in the final years of [the reign of Emperor] Wanli . . . which were extensively cultivated, especially in mountainous areas. Except for human consumption, it is also used to feed pigs. Cut and dry it, and like steamed vegetables it can be stored for a long time to guard against famine” (Hu et al. 1681).



GS (2008) 1413

Figure 1: A comparison of the number of records of pumpkin in Chinese local gazetteers.



After Zhejiang, pumpkin spread northward via the Grand Canal, reaching Suqian County, and counties along the Canal, such as Baoying County, Jiangdu County and Pei County, started to grow pumpkin during the reign of the Ming Emperor Wanli. In the Ming dynasty, as well as along the banks of the Grand Canal and the Taihu Lake basin, it was cultivated intensively along the lower reaches of the Yangtze River. In the early Qing dynasty, pumpkin cultivation spread to northern Jiangsu. Relevant records have been found for Xuyi County, Dafeng County and Dongtai County. On the whole, it was the most popular in the Taihu Lake basin: “There are many kinds of pumpkin,

and almost every household cultivates it" (Gao 1918).

In the Ming dynasty, cultivation of pumpkin in Jiangxi Province was mainly concentrated in its northwestern areas, and it is highly likely that the seeds were introduced from Fujian Province. This is because in the late Ming dynasty, migrants, mainly from Fujian, moved into northwestern Jiangxi, and pumpkin cultivation was still concentrated in the northwestern areas in the early Qing dynasty. Hakka migrants also brought pumpkin to Ganzhou Prefecture in southeastern Jiangxi: "Pumpkin came from the South, then was introduced to Fujian and Zhejiang provinces, and we can see it everywhere today" (Wang and Liu 1874). This reflects how pumpkin was introduced and gradually spread from Fujian to Jiangxi.

Pumpkin was introduced to Hunan Province in the final years of the reign of Ming Emperor Wanli, over 20 years later than Jiangxi Province. Tan Qixiang 譚其驤 believed that many people from northern Jiangxi moved to northern Hunan (Tan 1987). As "Jiangxi people filled Huguang Province (the current Hubei and Hunan provinces)" in the Ming dynasty, it is very likely that those from northern Jiangxi, where pumpkin was introduced first, brought pumpkin to Chenzhou Prefecture in northern Hunan. Although there are few records of pumpkin in Hunan during the Ming, after spreading for more than 50 years, it was extensively distributed in eastern and southern Hunan by the reign of Qing Emperor Kangxi. During the reign of Emperor Qianlong, Changsha Prefecture became an important producing area, so that "Xiangtan and Zhuzhou were top pumpkin-producing areas, and pumpkin was also called cushaw" (Chen et al. 1757), after which it gradually spread into northwest Hunan during the late Qing dynasty.

In Anhui Province, the first place to introduce pumpkin was Bozhou, in the northwest of Anhui, probably from Jiangsu. The Jiaqing period *Ningguo fuzhi* 寧國府志 (Gazetteer of Ningguo Prefecture) records: "Rice melon is pumpkin, and there was no pumpkin before in Ningguo Prefecture. Xian Yangxin 仙養心 took charge of Yanzhou in Zhejiang during the reign of Emperor Jiajing, brought it back and had it planted. Its taste is sweet, and it can be used instead of rice. It is everywhere now" (Hong and Shi 1815). This indicates that it was introduced into Anhui from Yanzhou in Zhejiang. In the early Qing dynasty, with the exception of some regions in Lu'an Subprefecture, Luzhou Prefecture and Guangde Subprefecture, it was extensively cultivated in the ten other prefectures of Anhui, though the scope of cultivation was reduced to areas of southern Anhui from the late Qing dynasty.

Pumpkin was introduced into Shandong Province mainly by sea and the Grand Canal from Jiangsu and Zhejiang provinces. Shandong has 25 records of it prior to the Qing dynasty, topping all other provinces, and most records concentrate around the Grand Canal areas and lower reaches of the Yellow River, where nearly all counties cultivated pumpkin. One of the earliest records is actually for Qingzhou Prefecture,

which borders on the Bohai Sea and the Yellow Sea, though during the Ming dynasty cultivation in coastal prefectures and northern counties such as Fushan, Jimo and Yizhou developed slowly. During the Qing dynasty, it was cultivated across Shandong and became a major staple, full use of hilly and mountainous areas being made.

Pumpkin came to Hebei Province from Shandong mainly via the Grand Canal. *Bencao gangmu* 本草綱目 (Compendium of materia medica) records, “Pumpkin is from the South, then was introduced to Fujian and Zhejiang, and is everywhere in Yenching today” (Li [1578] 2001). In the Ming dynasty, it was widely planted in southern Hebei, including Shuntian Prefecture, especially areas along the Grand Canal and Haihe basin. The novel *Honglou meng* 紅樓夢 (A dream of red mansions), published in 1791, mentions pumpkin many times, which reflects its popularity in Hebei. From the mid-Qing dynasty, pumpkin spread to the Hebei region north of the Great Wall. During the Republic of China “Zhangbei, Huai’an, Longguan, Wanquan, Kangbao, Xuanhua, Zhuolu, Yangyuan, Yanqing, Guyuan and Chicheng all produce[d] pumpkin” (Liang 1935). The number of records in local gazetteers in Hebei ranks top nationwide for any period after the reign of Emperor Kangxi.

Pumpkin was mainly introduced into Northeast China by migrants who “braved the journey to the northeast” from Shandong, Hebei and other places inside the Shanhai Pass. Liaoning Province was the first to cultivate it, as recorded in the 16th year of the reign of Emperor Kangxi (1677). For this growing number of migrants from inside the Shanhai Pass: “Pumpkin from Japan plays the role of a normal vegetable, and many people plant it” (Guan and Zhang 1909). It was increasingly used as a staple and was grown across Liaoning. After Liaoning, it spread to Heilongjiang and Jilin provinces successively, and in Heilongjiang, migrants were the first to introduce it: “Migrants build gardens to plant vegetables, for example, melon and pumpkin” (Xi [1810] 1984). Although it was introduced into Jilin only at the end of the nineteenth century, it spread quickly. By the period of the Republic of China it had become “an ordinary food, cultivated extensively within the territory” of Jilin (Bao et al. 1934), mainly along the Songhua and Liao rivers, and the southern foothills of the Changbai Mountains. In Heilongjiang, pumpkin was also “eaten regularly by farmers in winter” (Zhang and Hu 1919), and cultivation was concentrated in the central Songnen Plain and tributaries of the middle reaches of the Songhua River flowing eastward.

The cultivation of pumpkin in Yunnan Province spread to the east from Yongchang Prefecture and Dali Prefecture, which border Burma, basically along the Yunnan-Burma Road, indicating that pumpkin was introduced from Burma. In the early Qing dynasty, it was grown throughout most northern regions of Yunnan, where there were “pumpkin weighing hundreds of pounds” (Chen [1671] 1985). Another source remarks that: “All the farmers plant it. There are hundreds of pumpkins piled up like a mountain per family, enough to last a whole year” (Wu ca. [1782] 2001),

reflecting the thriving production and selling of pumpkin in Yunnan.

It was introduced into Guizhou Province from Yunnan in the final years of the reign of Emperor Wanli (the early seventeenth century), but developed so slowly that before the reign of Emperor Qianlong in the mid-eighteenth century, it was still limited to the corner of northeast Guizhou which had been the first area to introduce it. It was then cultivated patchily across the province, being distributed in the Wujiang drainage area and upper reaches of the Pearl River, finally spreading to most parts of the province in the late Qing dynasty and the Republic of China.

Prior to the Kangxi period, there was no record of pumpkin in Guangxi Province. The earliest record found is for Sicheng Prefecture in the west, which introduced pumpkin probably from Yunnan. Guilin Prefecture in the east was supposed to have introduced pumpkin from Guangdong: "It came from Guangdong in South China, so we call it *nangua* 南瓜 (pumpkin, literally melon from the south)" (Anonymous [1935] 1991). According to *Guangxi tongzhi* 廣西通志 (General gazetteer of Guangxi) of the reigns of the Qing Emperors Yongzheng and Jiaqing, the prefectures of Guilin, Pingling and Liuzhou in northeast Guangxi were the main areas producing pumpkin. Cultivation was patchy across southeast and southwest Guangxi during the Qianlong reign, and it did not spread widely until the Republic of China. It is also worth mentioning that Guangxi has the largest number of nicknames and sobriquets for pumpkins, about 20 kinds.

Pumpkin is documented in Sichuan Province as early as the 4th year of the reign of Emperor Wanli (1576), earlier than six neighboring provinces except Yunnan, so it is clear that it was not introduced from the Yangtze River basin, but from Yunnan. This coincides with Ho Ping-ti's research, who argues that the "Tea-Horse Road" trading route, which was reopened in the Ming dynasty, was one of the possible routes for the import of American crops to the capital and inland China. One route along the Tea-Horse Road passed through Ya'an, Rongjing and Hanyuan to the southwest of Chengdu, and another, used by Yunnan *tusi* 土司 (tribal leaders) who sent tribute to Beijing, went northward via Guizhou Province, or basically along the line of the present-day Chengdu-Kunming Railway (Ho 1979). The Ming dynasty prefectures and counties that recorded pumpkin—Jiading Subprefecture (adjacent to the abovementioned three places) and Yingshan County—are exactly the way that must be passed on these two routes. However, the development of pumpkin was slow in Sichuan, so that by the final years of the Kangxi reign cultivation was still limited to Shunqing Prefecture, which included Jiading Subprefecture and Yingshan County, and patchy cultivation in Chongqing Prefecture. From the Qianlong reign, cultivation rose suddenly in Sichuan, especially in mountainous areas, leading the country in the speed and area of cultivation. The authors believe that despite the fact that pumpkin was introduced from Yunnan to Sichuan early, yet it did not spread far, and that in most parts

of eastern and southern Sichuan it was introduced and spread from the southeast by migrants, the “Huguang people [who] filled Sichuan.” An account in the Republic of China period *Mianzhu xianzhi* 綿竹縣志 (Gazetteer of Mianzhu County) also reflects this fact: “Pumpkin from the South, was introduced to Fujian and Zhejiang, and then was introduced to Sichuan” (Wang and Huang 1920). In the 3rd year of the reign of Emperor Jiaqing (1798), the northwestern Sichuan plateau became an area famous for producing pumpkin: “Jinchuan [in Sichuan] produces pumpkin that is quite large” (Li 1798).

Yunyang Prefecture, in northwestern-most Hubei Province, had become a pumpkin producing area by the 6th year of the reign of Emperor Wanli (1578): “Pumpkin is produced in Zhushan, Shangjin, Zhuxi and Baokang” (Xu and Zhou [1578] 2007). Yunyang Prefecture is located at the intersection of Hubei, Henan, Chongqing and Shaanxi, in the hinterlands of the Qin-Ba Mountainous Area and middle reaches of the Han River. On one of the main routes for Yunnan tribal leaders to send tribute to Beijing, one can reach the Nanyang Basin by traveling from the Jialing River in Sichuan to the Han River, and then moving northward, so pumpkin was probably introduced from Sichuan to Hubei. The spread was slow, however, and it was not widely planted along the banks of the Han River in the north and the Yangtze River in the south until the reign of Emperor Kangxi, while pumpkin was introduced into southern Hubei from the lower reaches of the Yangtze River. During the Republic of China, pumpkin became “a provincial-level product” in Hubei.

Pumpkin is documented in Henan Province as early as the 43rd year of the reign of Emperor Jiajing (1564), earlier than all neighboring provinces despite being located in central China. Dengzhou is located in southwest Henan, at the junction of Henan and Hubei, connecting to Sichuan to the west and the central Yangzi region to the south. Situated in the Nanyang Basin, Dengzhou was also an important route for Yunnan tribal leaders to pay tribute to Beijing. The introduction of pumpkin was slow in the Ming dynasty, but spread quickly in the early Qing dynasty and was a common crop in prefectures in Henan.

Cultivation had begun in Shanxi Province by the 2nd year of the reign of Emperor Longqing (1568). It is more likely to have been introduced to Xiangling County in the south from Henan, spreading rapidly up from Jiangxi during the reign of Emperor Wanli, far faster than other provinces at that time. Ming dynasty texts record pumpkin 21 times, and the Wanli period *Shanxi tongzhi* 山西通志 (General gazetteer of Shanxi) (Li 1610) lists pumpkin as one of the province’s important melons. Besides Ningwu Prefecture and southern Datong Prefecture in northern Shanxi, pumpkin was distributed very widely in Shanxi, and cultivation did not decline until the Republic of China.

Further northwest, pumpkin arrived in Yansui Town, Qishan County and Baishui County in Shaanxi Province in the Wanli period. These three places are far from each

other, and the earliest records of pumpkin for the provinces surrounding it are all prior to that of Shaanxi, so it was probably introduced from different places at roughly the same time, though Shanxi is the most likely. Pumpkins were cultivated province-wide since the Kangxi reign, but mainly in mountainous area. By the Republic of China in the twentieth century, a very large amount of land was given over to its cultivation (Liu et al. 1929).

Pumpkin is recorded in the northwestern regions of Ningxia, Gansu and Xinjiang provinces in the final years of the reign of Ming Emperor Wanli, the early years of the reign of Qing Emperor Kangxi, and the middle years of the reign of Emperor Qianlong respectively. Pumpkin is recorded in Qishan County, Shaanxi Province on the old Silk Road in the 19th year of the reign of Emperor Wanli (1591), and from here it spread via the Silk Road to Ningxia. After the Qianlong period, pumpkin cultivation was concentrated along the Hexi Corridor and southeastern Gansu, and was especially widely distributed in the latter.

Pumpkin found its way to Xinjiang from multiple places, not just from Gansu. In the 29th year of the Qianlong reign (1764), a detachment of over 3000 Tungusic Xibo officers and soldiers were stationed in Yili in far northwest Xinjiang. Guan Xingcai 管興才 refers to this in his “Xiqian zhi ge” 西遷之歌 (Song of westward migration): “Take the pumpkin seeds of your hometown, and let them take root in the soil of western Xinjiang” (Writing group of *A brief history of the Xibo people* 1986), so it is possible that the pumpkin was introduced to Xinjiang from Liaoning in the northeast. In addition, in the 51st year of Emperor Kangxi (1712), Tulichen 圖理琛 was sent on a diplomatic mission to Torghut, and when he traveled across Russia and reached Saratov,⁶ he wrote, “Cuke and pumpkin . . . are sold,” so in the 36th year of the reign of Emperor Qianlong (1771), Torghut tribes probably introduced pumpkin to Xinjiang when returning east, though we cannot rule out the possibility of earlier introduction from west Asia to Xinjiang via the Silk Road.

Animal husbandry predominates in Qinghai, yet by the Republic of China, “all counties in Qinghai produced pumpkin” (Xu 1945). It had reached Hohhot in Inner Mongolia, north of Shaanxi and Shanxi by the 9th year of the reign of Emperor Xianfeng (1859), though it did not spread to its cattle-producing areas.

To sum up, pumpkin was introduced to China from China’s southeastern coastal areas to southwestern borders in the early sixteenth century. It spread to most provinces during the Ming dynasty. Among the American crops introduced to China, pumpkin was in the vanguard ahead of vegetables, such as tomatoes and peppers, and spread nationwide even earlier than staple crops like corn and sweet potato. During the Qing dynasty, pumpkin spread rapidly throughout the provinces. Nationwide, north

⁶ Саратов, a state of Russia, located in the southeast of the Eastern European Plain, lower reaches of Volga River, bordering Northwest Kazakhstan.

China and southwest China gradually became major pumpkin producing areas, and China eventually became the world's largest pumpkin producer.

3 Influences resulting from the introduction and spread of pumpkin in China

Pumpkin could provide effective relief in years of bad harvest and famine: "There is no harvest in the famine years, and pumpkin is the treatment for hunger, so we have been cultivating it for years" (Zhang [1658] 1956); "Pumpkin can replace grain, and before her death my mother persuaded people to cultivate it to relieve famine" (Wang [1810] 1987). Pumpkin was served as a staple when there was a shortage of grains: "Pumpkin, yellow and ripe is the best, and when rice is expensive, it is served as a staple, assuaging hunger" (Liu [1911] 1997). Pumpkin became a major food source: "Pumpkin is called 'rice melon,' most is planted in vacant land by poor people to withstand the cold winter, and it can save half the rice" (Gong and Li 1764). "Every farmer is cultivating pumpkin . . . to make up for the shortage of grain" (Lai et al. 1874). Pumpkin is tasty and can relieve famine in diverse ways. For instance, "red rice and pumpkin soup" played a huge role in the revolutionary years, and during the "cucurbitaceous vegetables for staple" campaign after the establishment of New China to a certain extent it relieved the shortage of grain.

Aside from its role in famine-relief and the mitigation of the land-to-population contradiction, the economic value of pumpkin also warrants our attention. Pumpkin is not expensive in comparison with other vegetables, but can bring considerable income due to its high yield. Prior to 1949, statistical data about pumpkin is scarce, but a small amount of data can speak volumes.

Table 2 Planting area and yield of cucurbitaceous vegetables in Fengtian Province in the 6th year of the Republic of China (1917)

Species	Area (<i>mu</i>)	Yield (<i>jin</i>)	Species	Area (<i>mu</i>)	Yield (<i>jin</i>)
cucumber	81,103	7,939,651	serpent melon	910	263,385
pumpkin	3942	1,609,433	white gourd	859	196,345

Source: *Nongye* 農業 (Agriculture) in *Fengtian tongzhi* 奉天通志 (General gazetteer of Fengtian Province) chap. 113, in the 23rd year of the Republic of China (1934).

From the situation in Fengtian Province during the Republic of China, we can see that the planting area of pumpkin was far less than that of cucumber, but far more than that of snake melon and wax gourd. It had high yield per unit, 408 kg per *mu* (Chinese acre), way more than other melons and most vegetables, so "farmers could earn more money from pumpkin" (Wang et al. 1940).

Pumpkin seeds had also been a commodity in circulation until the reign of Emperor

Daoguang: "Both pumpkin seeds and watermelon seeds were sold in the market" (Wu [1848] 1963). Pumpkin seeds were a top-grade snack: "Stir fried pumpkin seeds are especially delicious, one of the best snacks to entertain guests. Many people enjoy it in teahouses and restaurants. Pumpkin seeds produced in Shaanxi are the top-grade snack for a dinner" (Wang and Pang 1931). Shaanxi seeds were "precious," and growing pumpkins would certainly bring in a good income. During the Republic of China, there were also reports giving price information on different brands of pumpkin seeds (Anonymous 1936).

The fact that pumpkin provides a necessary supplement to food crops and yields economic benefits entailed its integration into the local cropping system. Although pumpkin was, and still is, planted in very large quantities in China, it complements existing crops very well, increasing the diversity of multiple cropping and intercropping. Crops planted before it in the year can include stubble spinach, or early-ripe spring-sown leaf vegetables, such as baby oilseed rape, pakchoi, summer radish, crown daisy and cabbage, and after it Chinese cabbage, spinach, and so forth (Lü et al. 1987). It can be intercropped with various vegetables, such as early-spring cabbage, potato, garlic or onion, dwarf bean and fast-growing leaf vegetables in suburban areas, and with grains and vegetables like wheat, corn and dwarf cowpea in rural areas (Zhang et al. 1989), increasing the efficiency of summer seeding as well as rates of land utilization.

An old Chinese saying goes, "medicine and food shared the same sources," and pumpkin soon became recognized as a useful medicine. Since the Qing dynasty, almost all books and records regarding *materia medica* have recorded pumpkin, considering it to be of high medicinal value and contributing significantly to the development of traditional Chinese medicine in China. Li Shizhen considered pumpkin as "sweet, warm, nontoxic . . . tonifying one's vitality 補中益氣" (Li [1578] 2001). Pumpkin came to be credited with many therapeutic uses: "Pumpkin is a cure for opium addiction" (Wu [1844] 1959), "Pumpkin pedicle can be used for tocolysis, wonderful!"; "In cases of burns from hot soup or fire, paint the wound with pumpkin, and it will stop the pain immediately like magic, the more mature the pumpkin the better" (Zhao [1765] 1963); "Pumpkin root can cure all the fire diseases, and cures smoke detoxification. Pumpkin flowers can cure coughs, enhance the voice and are a treatment for chronic illnesses" (Anonymous [1911] 2007).

4 Conclusion

Slightly after its introduction to the southeast coast in China, pumpkin was independently introduced from India and Burma into the southwest frontier. Subsequently, pumpkin gained rapidly in popularity on the Chinese mainland,

spreading northward and westward from the southeast, as well as northward and eastward from the southwest. Pumpkin led the way in the introduction of American crops into China in the Ming dynasty, and prior to the seventeenth century, except for the three northeast provinces (Heilongjiang, Jilin and Liaoning), Taiwan, Xinjiang, Qinghai and Tibet, pumpkin cultivation was generally well-developed. During the Qing dynasty, pumpkin cultivation was promoted even more widely, and by the Republic of China, with the exception of Tibet, the nationwide spread of pumpkin was completed, forming stable pumpkin-producing regions and main cultivating areas, with North China and Southwest China becoming the most significant. As a result, China firmly established itself as the world's largest pumpkin producer, consumer and exporter.

Compared with the localization of other American crops in China, pumpkin was the earliest to play its full part. Although corn and sweet potatoes, after the mid Qing dynasty, surpassed pumpkin in yield and cultivation area, and tobacco and pepper, though latecomers, ranked higher in output value, it is undeniable that pumpkin was the “pioneer” among American crops. In addition, before the recent period of reform and opening up, pumpkin remained an essential foodstuff, surpassing the vast majority of fruits and vegetables, though this is no longer the case today. Globally, pumpkin, after its introduction to Europe, was never regarded as a major food crop, while it impacted China more profoundly (especially due to its value in famine-relief) than other countries of the Old World that introduced and cultivated pumpkin in the same period.

The introduction and localization of pumpkin in China had various far-reaching impacts. Specifically, the most significant historical influence was the role it played in famine prevention and relief. In addition, it augmented the rural economy and fitted in well with the traditional agricultural planting system. Since the late Ming dynasty, pumpkin also served as an essential Chinese *materia medica*, making numerous contributions to wound treatment and well-being.

References

- Anonymous. [1911] 2007. *Fenlei caoyao xing* 分類草藥性 (Classification of the nature of herbal medicines): 60, 106. Beijing: Traditional Chinese Medical Classics Publishing House.
- Anonymous. [1935] 1991. “Chanye” 產業 (Industry). In *Gongcheng xianzhi* 恭城縣志 (Gazetteer of Gongcheng County) chap. 4. In *Guangxi fangzhi wuchan ziliao xuanbian shang* 廣西方志物產資料選編·上 (Selections of products in Guangxi gazetteers, vol. 1), compiled by the Old Gazetteer Compilation Office of Guangxi Gazetteer Repository, 471. Nanning: Guangxi People's Publishing House.
- Anonymous. 1936. “Nanbei huo” 南北貨 (Sundry goods). In *Shangqing baogao* 商情報告 (Business report) (516) May 21.

- Bao, Wenjun 包文俊, Qu Lianben 曲廉本, Li Rong 李溶 and Fan Daquan 范大全. 1934. "Wuchan" 物產 (Products). In *Lishu xianzhi* 梨樹縣志 (Gazetteer of Lishu County) series 6, chap. 1:4.
- Bao, Yu 暴煜 and Li Zhuokui 李卓揆. 1750. "Wuchan." In *Xiangshan xianzhi* 香山縣志 (Gazetteer of Xiangshan County) chap. 3:32.
- Chen, Ding 陳鼎. [1671] 1985. *Dian youji* 滇遊記 (Journey to Yunnan): 7. Beijing: Zhonghua Book Company.
- Chen, Hongmou 陳宏謀, Fan Xian 范咸 and Ouyang Zhenghuan 歐陽正煥. 1757. "Wuchan." In *Hunan tongzhi* 湖南通志 (Gazetteer of Hunan Province) chap. 50:8.
- Chen, Mingshu 陳銘樞 and Zeng Jian 曾蹇. 1933. "Nongye" 農業 (Agriculture). In *Hainandao zhi* 海南島志 (Gazetteer of Hainan Island) chap. 13:280.
- Chen, Yingbin 陳應賓 and Min Wenzhen 閔文振. 1538. "Tuchan" 土產 (Local products). In *Funing zhouzhi* 福寧州志 (Gazetteer of Funing Subprefecture) chap. 3:7.
- Chen, Zonghai 陳宗海 and Li Xingrui 李星瑞. 1895. "Wuchan." In *Lijiang fuzhi* 麗江府志 (Gazetteer of Lijiang Prefecture) chap. 3:30.
- Fan, Pu 范溥 and Tian Shirong 田世容. 1725. "Wuchan." In *Shunning fuzhi* 順寧府志 (Gazetteer of Shunning Prefecture) chap. 7:50.
- Feng, Menglong 馮夢龍. [1637] 1983. "Wuchan." In *Shouning daizhi* 壽寧待志 (Gazetteer of Shouning County): 45. Fuzhou: Fujian People's Publishing House.
- Gao, Rugui 高如圭. 1918. "Wuchan." In *Zhanglian xiaozhi* 章練小志 (Gazetteer of Zhanglian Town) chap. 2:13.
- Gong, Maorang 宮懋讓 and Li Wenzao 李文藻. 1764. "Fangwu kao" 方物考 (Studies on local products). In *Zhucheng xianzhi* 諸城縣志 (Gazetteer of Zhucheng County) chap. 12:2.
- Guan, Fenghe 管鳳猷 and Zhang Wenzao 張文藻. 1909. "Wuchan." In *Haicheng xianzhi* 海城縣志 (Gazetteer of Haicheng County) chap. 1:37.
- Ho, Ping-ti 何炳棣. 1959. *Studies on the Population of China, 1368-1953*. Cambridge (Mass.): Harvard University Press.
- Ho, Ping-ti. 1979. "Meizhou zuowu de yinjin chuanbo jiqi dui Zhongguo liangshi chansheng de yingxiang (er)" 美洲作物的引进、传播及其对中国粮食生产的影响 (二) (The Introduction and dissemination of American crops and its impact on grain production in China, sec. 2). *Shijie nongye* 世界农业 (World Agriculture) 1(5):21-31.
- Hong, Liangji 洪亮吉 and Shi Jin 施晉. 1815. "Wuchan." In *Ningguo fuzhi* 寧國府志 (Gazetteer of Ningguo Prefecture) chap. 18:2.
- Hu, Qijia 胡啟甲, Yu Yun 俞允 and Zhao Yan 趙衍. 1681. "Wuchan." In *Dongyang xianzhi* 東陽縣志 (Gazetteer of Dongyang County) chap. 3:7.
- Jia, Ming 賈銘. [before 1368] 1988. "Cai lei" 菜類 (Categories of vegetables). In *Yinshi xuzhi* 飲食須知 (Essentials of diet): 27. Beijing: People's Medical Publishing House.
- Lai, Changqi 賴昌期, Tan Yun 譚澣 and Lu Tingfen 盧廷葵. 1874. "Wuchan." In *Yangcheng xianzhi* 陽城縣志 (Gazetteer of Yangcheng County) chap. 5:3.
- Lan, Mao 蘭茂. [before 1556] 1959. *Diannan bencao* 滇南本草 (Material medica of south Yunnan): 130. Kunming: Yunnan People's Publishing House.
- Li, Ba 李拔. 1762. "Wuchan." In *Funing fuzhi* 福寧府志 (Gazetteer of Funing Prefecture) chap.

12:4.

- Li, Houji 李厚基, Shen Yuqing 沈瑜慶 and Chen Yan 陳衍. 1938. "Wuchan zhi" 物產志 (Gazetteer of products). In *Fujian tongji* 福建通紀 (General gazetteer of Fujian Province) chap. 3:16.
- Li, Shixiong 李世熊. 1683. "Tuchan." In *Ninghua xianzhi* 寧化縣志 (Gazetteer of Ninghua County) chap. 2:54.
- Li, Shizhen 李時珍. [1578] 2001. *Bencao gangmu* 本草綱目 (Compendium of materia medica): 1029. Shenyang: Liaohai Publishing House.
- Li, Weizhen 李維楨. 1610. "Wuchan." In *Shanxi tongzhi* 山西通志 (General gazetteer of Shanxi) chap. 7:1.
- Li, Xinheng 李心衡. 1798. "Nangua" 南瓜 (Pumpkin). In *Jinchuan suoji* 金川瑣記 (Account of Jinchuan) chap. 3:19.
- Li, Xinsheng 李昕升, Liu Yisheng 刘宜生 and Wang Siming 王思明. 2014. "Xinzhongguo chengli houde nangua shengchan yu fazhan" 新中国成立后的南瓜生产与发展 (Production and development of pumpkin after the founding of the PRC). *Zhongguo shucai* 中国蔬菜 (China Vegetables) (8):52-55.
- Li, Xinsheng and Lu Yong 卢勇. 2017. "Nangua chuanru Zhongguo dui chuantong yixue de yingxiang" 南瓜传入中国对传统医学的影响 (The influence on traditional medicine of the introduction of pumpkin into China). *Shanxi nongye daxue xuebao* 山西农业大学学报 (Journal of Shanxi Agricultural University, Social Science Edition) 16(1):56-61.
- Li, Xinsheng, Wang Siming and Ding Xiaolei 丁晓蕾. 2013. "Nangua chuanru Zhongguo shijian kao" 南瓜传入中国时间考 (Study on the time of the introduction of pumpkin into China). *Zhongguo shehui jingjishi yanjiu* 中国社会经济史研究 (The Journal of Chinese Social and Economic History) (3):88-94.
- Liang, Jianzhang 梁建章. 1935. "Wuchan bian zhiyi" 物產編之一 (Series of products, sec. 1). In *Chaha'ersheng tongzhi* 察哈爾省通志 (Gazetteer of Chaha'er Province) chap. 9:2.
- Liang, Zhaoyang 梁兆陽, Cai Guozhen 蔡国祯 and Zhang Xie 張燮. 1632. "Wuchan." In *Haicheng xianzhi* 海澄縣志 (Gazetteer of Haicheng County) chap. 11:18.
- Liu, Jinan 劉濟南, Zhang Doushan 張斗山, Cao Zizheng 曹子正 and Cao Sicong 曹思聰. 1929. "Wuchan zhi." In *Hengshan xianzhi* 橫山縣志 (Gazetteer of Hengshan County) chap. 3:7.
- Liu, Ruji 劉汝驥. [1911] 1997. Photo-reprint of *Taopi gongdu* 陶甓公牘 (Social survey of Huizhou, edition of Anhui Printing Office in the 3rd year of Emperor Xuantong's reign): 770. Hefei: Huangshan Publishing House.
- Liu, Yichun 劉沂春, Xu Shougang 徐守綱 and Pan Shilin 潘士遴. 1638. "Tuchan." In *Wucheng xianzhi* 烏程縣志 (Gazetteer of Wucheng County) chap. 4:32.
- Lu, Ao 陸鏊 and Chen Xuankui 陳烜奎. 1633. "Tuchan." In *Chongzhen Zhaoqing fuzhi* 崇禎肇慶府志 (Gazetteer of Zhaoqing Prefecture in Emperor Chongzhen's reign) chap. 10:5.
- Lü, Qiyu 吕启愚 et al. 1987. *Donggua nangua kugua sigua* 冬瓜、南瓜、苦瓜、丝瓜 (White gourd, pumpkin, bitter gourd and towel gourd): 94. Beijing: Beijing Publishing House.
- Tan, Qixiang 譚其驤. 1987. *Changshui ji* 长水集 (Collection of studies on rivers) vol. 1:330-360. Beijing: People's Publishing House.
- Wang, Chenglie 汪承烈 and Pang Linbing 龐麟炳. 1931. "Wuchan zhi." In *Xuanhan xianzhi* 宣漢縣

- 志 (Gazetteer of Xuanhan County) chap. 4:53.
- Wang, Jianzhong 王建中 and Liu Yi 劉繹. 1874. "Wuchan." In *Yongfeng xianzhi* 永豐縣志 (Gazetteer of Yongfeng County) chap. 5:10.
- Wang, Xuequan 王學權. [1810] 1987. "Lun yaoxing" 論藥性 (On the nature of medicinal herbs). In *Chongqing tang suibi* 重慶堂隨筆 (Essays in Chongqing Hall): 91-92. Beijing: Traditional Chinese Medical Classics Publishing House.
- Wang, Zuo 王佐, Fan Changxu 樊昌緒 and Gu Cong 顧縱. 1940. "Fangwu zhi" 方物志 (Gazetteer of local products). In *Xifeng xianzhi* 息烽縣志 (Gazetteer of Xifeng County) chap. 20:33.
- Wang, Zuo and Huang Shangyi 黃尚毅. 1920. "Wuchan zhi." In *Mianzhu xianzhi* 綿竹縣志 (Gazetteer of Mianzhu County) chap. 8:10.
- Writing Group of *A brief history of the Xibo people*. 1986. *Xibo zu jianshi* 錫伯族簡史 (A brief history of the Xibo people): 110. Beijing: The Ethnic Publishing House.
- Wu, Daxun 吳大勳. [ca. 1782] 2001. "Wu bu" 物部 (Branch of products). In *Diannan wenjianlu* 滇南聞見錄 (A survey in south Yunnan) chap. 2. In *Yunnan shiliao congkan* 雲南史料叢刊 (Series of historical materials of Yunnan), edited by Fang Guoyu 方國瑜, vol. 12:31. Kunming: Yunnan University Press.
- Wu, Qijun 吳其濬. [1844] 1959. "Shu lei" 蔬類 (Categories of vegetables). In *Zhiwu mingshi tukao changbian* 植物名實圖考長編 (Long edition of illustrated treatise on plants): 301. Beijing: Commercial Press.
- Wu, Qijun. [1848] 1963. "Qunfang lei" 群芳類 (Categories of flowers). In *Zhiwu mingshi tukao* 植物名實圖考 (Illustrated treatise on plants): 696. Beijing: Commercial Press.
- Wu, Shengnian 吳繩年 and He Mengyao 何夢瑤. 1760. "Wuchan." In *Qianlong Zhaoqing fuzhi* 乾隆肇慶府志 (Gazetteer of Zhaoqing Prefecture in the reign of Emperor Qianlong) chap. 22:3.
- Xi, Qing 西清. [1810] 1984. *Heilongjiang waiji* 黑龍江外記 (Gazetteer of Heilongjiang Province): 83. Harbin: Heilongjiang People's Publishing House.
- Xie, Zhaozhe 謝肇淛. ca. 1621. "Su lue" 俗略 (Overview of customs). In *Dian lue* 滇略 (Overview of Yunnan) chap. 4:11.
- Xu, Chonghao 許崇灝. 1945. "Nong chan" 農產 (Agricultural products). In *Qinghai zilue* 青海志略 (Gazetteer of Qinghai Province) chap. 5:46.
- Xu, Xuemo 徐學謨 and Zhou Shaoji 周紹稷. [1578] 2007. "Wuchan." In *Yunyang fuzhi* 鄖陽府志 (Gazetteer of Yunyang Prefecture): 101. Wuhan: Changjiang Publishing House.
- Zhang, Jian 張箭. 2010. "Nangua fazhan chuanbo shi chutan" 南瓜发展传播史初探 (An exploration of development of the history of pumpkins). *Yantai daxue xuebao* 烟台大学学报 (Journal of Yantai University, Philosophy and Social Science Edition) (1):100-108.
- Zhang, Linru 張霖如 and Hu Naixin 胡乃新. 1919. "Wuchan." In *Baiquan xianzhi* 拜泉縣志 (Gazetteer of Baiquan County) chap. 1:35.
- Zhang, Lüxiang 張履祥. [1658] 1956. "Bu nongshu hou" 補農書後 (Addendum to Shen's treatise on agriculture). In *Shenshi nongshu* 沈氏農書 (Shen's agricultural treatise), by Mr. Shen in Lianchuan 漣川沈氏, 36. Beijing: Zhonghua Book Company.
- Zhang, Shitian 張世田, He Zecheng 何澤成 and Zhang Hongjie 張洪杰. 1989. *Nangua xihulu sungua* 南瓜、西葫蘆、笋瓜 (Pumpkin, summer squash and winter squash): 22-24. Zhengzhou:

Henan Science and Technology Press.

Zhao, Xuemin 趙學敏. [1765] 1963. “Zhu shu bu” 諸蔬部 (Branch of vegetables). In *Bencao gangmu shiyi* 本草綱目拾遺 (A supplement to *Compendium of materia medica*): 337. Beijing: People’s Medical Publishing House.

Zhou, Yu 周裕. [1790] 2001. “Congzheng Miandian riji” 從征緬甸日記 (Diaries of an expedition to Burma). In *Yunnan shiliao congan*, edited by Fang Guoyu, 786. Kunming: Yunnan University Press.

Zhou, Zhongxuan 周鍾瑄, Chen Menglin 陳夢林 and Li Qinwen 李欽文. 1717. “Wuchan.” In *Zhuluo xianzhi* 諸羅縣志 (Gazetteer of Zhuluo County) chap. 10:10.