

## Chapter 5

# Soybean and Changing Food Culture in Chinese History

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Soybean, known as *shu* 菽 in Chinese classics, a native crop in China with multiple uses, was considered one of the five fundamental food crops in early Chinese agriculture, the other four being *ji* (稷 setaria millet), *shu* (黍 panicum millet), *dao* (稻 rice), *mai* (麥 wheat and barley). According to H.T. Huang who did a thorough study on traditional Chinese food technology, unlike the other four grains which could easily be cooked to be eaten as a staple food, soybean was no longer consumed as a staple food after the 6th century when more complicated processing techniques including prolonged fermentation, grinding, filtering, sprouting, etc. had transformed soybean into an ingredient for making tasty or nutritious non-staple foods, including condiments such as *jiang* paste, soy sauce, *shi* fermented beans, or substantial foods such as bean curd, yuba, or tofu skin. A good part of the technology for making these foods is recorded in *Qimin yaoshu* (齊民要術 Essential Techniques for the People) of the 6th century, one of the earliest and most important Chinese agricultural treatises. (Huang, 2000) Not being a staple food crop like rice or wheat after the Tang dynasty, soybean played a unique role in China's agronomy and

food culture ever since. As the crop grew almost everywhere in China, though not in great quantity, it was also used as animal feed, and as a natural fertilising crop to rotate with staple crops, with its nitrogen-rich roots.

This chapter tells the story of how soybean as a non-staple but popular food crop shapes Chinese history since late imperial time. It highlights the legume's unique role in the creation of the empire-wide urban food market in China of the 18th century, and how it articulates Chinese vision of modernity in the early 20th century when China was facing increasing challenges from the West. The modern history of soybean in China prepares its global role today.

## 1. Soybean in Late Imperial Chinese Food Culture

Chinese traditional diet was mostly, though not exclusively, vegetarian. It was not necessarily a religious practice, nor one limited to the lower classes who could not afford animal food. Even the diet of the elite literati was essentially vegetarian by choice, a tradition that was already observable in the Song dynasty (960–1279). In the late imperial period, Li Yu (李漁 1611–1680), a leading literary figure, maverick scholar and Ming loyalist from the Jiangnan region, explained in his famous jottings, *Xianqing Ou ji* (閒情偶記 Leisure notes) on the beauty of vegetarian foods: “They are light, clean, sweet-smelling, crispy. But people do not understand that their greatest beauty lies in their fresh savour (*xian* 鮮) that surpasses that of meats.” He gave the example of wild bamboo shoots, a favourite vegetable for Jiangnan elites. “Boil them plainly and eat with a little soy sauce, as the most exquisite food is often prepared simply and consumed with nothing else.” Soy sauce (*jiangyou* 醬油), for Li Yu was clearly the key that brought out the superior *xian* or “meaty” flavour in vegetables appreciated by food connoisseurs.

Soy sauce, one of the most popular Chinese condiments today was then enjoyed mostly by the elite classes. The first extant recipe for making soy sauce was recorded by the famous Yuan painter Ni Zan (倪瓚 1301–1374) who mentioned the key steps of fermentation of soybeans beginning in the hot season and brewing in brine. More than two centuries later, a Ming literatus Tian Yiheng (田藝衡 1524–1591), son of a prominent Zhejiang scholar-official told his readers that various soy foods, including

soy sauce were “rare foods for modest peasants. Those living in isolated hills and valleys might never taste it in their whole life”, and that products that one could buy in the market were often corrupt. In other words, soy foods were still enjoyed only by the privileged classes, even in prosperous regions in Ming China (Leung, forthcoming)

The example of soy sauce was only one of the many examples of the slow popularisation of soy foods despite the fact that the technology of making them had been known for centuries. In some of the late Ming and early Qing compilations of recipes, one can see that elite families were making their own soy foods, such as pastes (*jiang* 醬) and sauce, fermented beans, bean curds, and yoba (skin of bean curds), and probably other soy foods which were not yet widely commodified. The wider society was able to enjoy the foods more easily only when these became affordable and increasingly commodified from the 18th century onward. The key to this change was the Manchu conquest of China in 1644 allowing the full integration of Manchuria in China luring continuous waves of migration of Chinese peasants, transforming the vast region into a major agricultural zone in the Qing empire specialised in the production of soybean as a cash crop. Before this moment, soybeans in China, though grown almost everywhere, were cultivated mostly on road-sides, on fringes of fields, or as a gap crop rotating with staple crops like rice, largely insufficient to provide for the market of the empire.

## 2. Manchuria and the Popularisation of Soy Foods in the Qing Empire

Manchuria before the Qing conquest of China in 1644 was culturally and economically distinct from China proper. It was not an agricultural region, but mostly pastoral land and forests where Jurchen and Mongol nomads thrived on hunting, cattle rearing, gathering of forest products, fishery, etc. Soybeans were indigenous crops, but grown in relatively small quantities used mostly as fodder for horses and camels and traditionally levied in kind as a land tax until the late 17th century. The situation changed when the region became part of the Qing empire, allowing Han Chinese peasants to move in and settle to cultivate land, which was not the traditional occupation of the Manchu. Soybean soon became the most lucrative crop

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to grow in the region, used not only as an animal feed as in the Manchu tradition, but mostly for exportation to China proper on a massive scale as ingredient for human soy foods, oil making, or in the form of soy meal as fodder or fertiliser. (Yi, 1993; Diao and Yi, 1994; Ding *et al.*, 2004)

The first Qing emperor Shunzhi (1644–1661) already saw the need to develop agriculture in Manchuria to secure food provision for its population and the military units of the Manchu home base. In 1653, he announced the first edict to encourage the immigration of Chinese peasants to cultivate vast Manchurian land, by providing them with loans in the form of grain and buffalo — twenty heads for every hundred peasants. This announcement triggered the first wave of Chinese peasants moving into Manchuria, followed by successive waves throughout the dynasty, all aspiring to make a good living by cultivating lucrative soybean. (Yi, 1993) Before the mid-18th century however, for fear of jeopardising food security in Manchuria, the Manchu state only allowed the beans to be exported to China proper in limited quantities via land routes and along the Grand Canal. (Kato, 1953) The increasing but still insufficient supply of Manchurian beans in China proper paradoxically exposed ever more clearly its long-standing soybean shortage. The problem of shortage was fully explained in a memorial issued in 1763 by Yang Tingzhang, governor-general of Fujian-Zhejiang provinces, in which he complained about the insufficient supply of Manchurian beans: “Yellow soybeans are used by the people in making *jiang* condiments, tofu, vegetarian dishes, and as fodder for horses. There is a huge demand. But Zhejiang soybean production is inadequate, and the amount received from Fengtian (Manchuria) is small ... and does not reach all counties.” Yang pleaded for direct maritime shipments of soybeans from Shandong province (where production was also abundant), in hopes that the trade would “bring down the price of the beans (in Zhejiang). This would be greatly beneficial to the livelihood of people in the province...” His memorial shows that the limited access to Manchurian soybean in the Chinese market in the mid-18th century only served to whet the Chinese appetite for more soybean (Leung, forthcoming).

It was only from the early 1770s, when the Manchu state felt politically and militarily secure, and realised the great fiscal benefits of taxing soybean exports from Manchuria that the ban on maritime trade along the Chinese coast was progressively lifted. This policy allowing bulk

shipments of beans on big boats descending China's eastern coastline greatly boosted the supply in China proper. The growing economic value of soybean cultivation encouraged more Chinese peasants to move into Manchuria until the early 20th century when northern Manchuria was also open to agriculture and immigration, further expanded the production and exportation of soybeans, not only to China proper, but also to the world. China thus became a global soybean producer and exporter (Kato, 1953; Yi 1993; Ding *et al.*, 2004; Kung and Li 2011).

The increase of Manchurian soybean commodification and exportation to China has been well studied: While the annual Manchurian soybean surplus was under 1.5 million *shi* (石, around 118,800 tons) in the late 17th century, it increased to 3 million *shi* in the first half of the 18th century, topped 4 million *shi* in 1875 and reached 7 million in 1900. Estimated exports from Manchuria to China proper increased from 1 to 1.5 million *shi* in the late 18th century to 3 million in 1875, and more than 5 million by 1900 (Isett, 2007). One consequence of the thriving maritime soy trade was the spectacular rise of Shanghai, ultimately overshadowing Suzhou as the leading port city in Jiangnan in the 18th century. The Shanghai soy trade guild (*douhang* 豆行) established in 1765 was a landmark, and by the mid-19th century, the guild at Cuixiu Hall (萃秀堂), in the City God Temple Garden became the biggest and most powerful of the 21 merchant guilds in the city by 1843, and a key stakeholder of the city's governance. Its site is still a tourist attraction today. Manchurian soybean traders along China's eastern coast formed a tight network and subsequently acquired a dominant position in municipal governance in the most prosperous part of China in the late imperial period (Fan, 2013).

The continuous and ample supply of Manchurian soybeans explains the popularization of culinary practices based on the everyday use of soy-based condiments that one can find in popular Qing recipe books. The emergence and subsequent strong presence of sizable urban soy food manufactures (or pickle shops — *jiangyuan* 醬園, or *jiangfang* 醬坊) in the urban landscape was a mid-Qing phenomenon. These shops made all kinds of fermented foods and drinks, mostly with soy sauce as the branding product. A 1933 gazetteer defined the function of pickle shops as follows: “They can make anything that regulates taste, especially soy sauce”. In official documents and literati writings, one can find sporadic mentions

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of soy manufactures in North China, the Jiangnan region, and coastal cities, beginning in the Yongzheng period (1723–1735) and increasingly throughout the 18th and 19th centuries. Pickle shops in major maritime and riverine trade ports grew in significant numbers and began to establish collective guilds (*gongsuo* 公所) in the 1870s. The earliest, and one of the biggest, was the one established in 1873 in Suzhou by 86 pre-existing local shops. By the early 20th century, most counties had more than one shop, and some of the recorded manufacturers claimed their origin in the earlier Qing period or even in the late Ming. By the end of the Qing empire, pickle shops had become a major component of the Chinese urban landscape, some of which were identified with the cities themselves, such as Liubiju (六必居) for Peking, Yutang (玉堂) for Jining (Shandong), Hu Yumei (胡玉美) for Anqing (Anhui), Dingfeng (鼎豐) for Pinghu (Zhejiang), Feng Wantong (馮萬通) for Shanghai, with emerging brands in southern provinces like Hunan, Sichuan, Fujian, and Guangdong (Leung, forthcoming).

Republican sources provide more precise information that depicts the magnitude of the pickle shop phenomenon as an important marker of late imperial Chinese urban food culture. A 1926 article on Peking pickle shops gave a count of more than 140 shops of different sizes, while a 1933 report on the industry in Zhejiang gave a count of 322 pickle shops in the province with larger concentrations of over 80 shops in two counties and anything between a dozen to over 50 shops for the other counties. Many of these shops were established in the Qing period. Zhao Ronguang (趙榮光), food historian in China, did a first systematic study of Shanghai pickle shops in 2005, based on shops registered in the city in the 1930s and 1940s. He identified the names and addresses of 102 shops of the “traditional” artisanal type, and 251 “modern” shops using chemical methods. This counting, which Zhao still considered incomplete, does show that in Shanghai alone, more than one hundred old traditional pickle shops were doing business in the early 20th century, many of which were probably established in the Qing empire. Some of the allegedly “modern” shops might also have been established earlier and changed production methods in the Republican period (Zhao, 2005). The data fully reflects the burgeoning of an urban food culture in the Qing empire and early Republican China surrounding the proliferation of pickle shops from the

late 18th century, made possible by the ample supply of Manchurian soybeans.

### 3. Soybean and Chinese Modernity

Soybean with its growing economic and cultural importance during the Qing empire acquired yet other values at the turn of the 20th century. It was a critical moment when China, facing unprecedented challenges from the West, was envisioning a modernity defined by Western ideals but also taking into account its own history. Chinese revolutionaries and political idealists soon identified soybean, a traditional and indigenous food crop, as the symbol of Chinese dietetic modernity, when western scientific nutritional knowledge was introduced.

Li Shizeng (李石曾 alias Li Yuying 李煜瀛, 1881–1973), an early anarchist from a prominent scholar-official family, was one of the first pioneer soybean scientists who studied and published the chemistry of soybean in France during the first decade of the 20th century when he also set up a factory in a Parisian suburb to make soy foods, including tofu and soy milk. Li had a much bigger agenda behind his early efforts in studying soybean as an intellectual pursuit. His plan was to demonstrate to the world the superiority of Chinese dietetics, and China's readiness to be part of the modern world. He joined the Republican revolutionary party led by Sun Yat-sen (1866–1925) in 1907 and published many articles on soybean and vegetarian diets thereafter. In 1908 he wrote an article to prophesise that Chinese traditional tofu as a cheap nutritious food would be widely accepted by the rest of the world in the new 20th century and recommended vegetarian diet for the modern world. As a westernised intellectual, Li highlighted the scientific and secular aspects of vegetarianism, distancing himself from Buddhist vegetarianism. He wrote that vegetables were better foods because they contained all the basic nutrients (protein, fat, and especially carbohydrates) and were less toxic than meat. Li's most important conclusion on Chinese vegetarianism was that since food plants were cheaper and better sources of nutrients, China should encourage its people to retain its vegetarian dietetic culture and not be misled to follow the Western model of developing meat industries. The choice of soybean as his research topic in France cannot be better understood in this



context: as a legume known for its high protein content, it was for Li the ideal food crop for a poor, but modernising China.

Li's influence on Sun Yat-sen, who established the Republic of China after overthrowing the Qing regime in 1911, can be seen in Sun's plans for building the modern Chinese Republic as drawn out in his *Strategies in State Building* (1919). The text began with a chapter on "Food and Drink" in which he praised China for its dietetic traditions which, to him, were "superior to all civilised countries", contrary to China's other areas which were "backward" compared to the West. He mentioned in particular Chinese superior techniques in making vegetarian foods. Compared to Western vegetarian dishes which were, for him, not refined nor sufficiently nutritious, "in China, vegetarians eat bean curd, which is actually the 'meat' in vegetarian diets... This is why China is entirely attuned to vegetarian diets even before (Western) scholars made recommendation." He was clearly convinced by Li and other vegetarian political activists of his time that Republican China as a modern state should not follow the Western example of developing meat industries, given the country's huge soybean resources and its strong vegetarian tradition (Leung, 2019; Fu, 2018).

However, modern, secular vegetarianism did not become the "national diet" for Republican China despite the efforts of Sun and Li, and was severely challenged by US-trained scientists, like Wu Xian (吳憲 1893–1959) whose studies on vegetarian diet in the 1920s established the link between the diet, found to be dangerously deficient, and China's "inferior culture". This position was shared by many Chinese intellectuals of the time recommending thorough westernization for China to reinvigorate its economic and cultural strengths (Leung, 2019). Yet at the same time of the developing controversy, soybean, increasingly seen as an important food and industrial crop, became a subject of global scientific research. Chinese agronomists trained in Japan or the US began to carry out research in experiment stations or in major universities to develop new high-yield breeds to meet increasing market demand. The task of improving Chinese soybean breeds was, for Chinese agronomists, like Wang Shou (王綏 1897–1972), Cornell-trained agronomist, a patriotic act above all, as "soybean is China's lifeline", being China's most nutritious food plant, accounting for 21% of China's total export (in 1934). In 1933 he gave a lecture at Cornell on the future of Chinese soybean in the US. After



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providing the scientific data on soybean, especially its high protein content, he explained to his American audience that soybean was the most cost-effective way for the Chinese to obtain their required nutrition as they ingested the protein directly by eating soy foods, and not indirectly by eating the meat of the cattle fed on soybean, which was a much more costly procedure that China could hardly afford. He continued his prediction for the future of soybean in the US, "As the population in your country is still sparse, and you have vast spans of farmland, you are natural meat-eaters. But I truly think that when your population grows, you will change your diet from animal-based to vegetarian. This will certainly happen to your people, as it has happened in China. You will then realise the value of soybean".

While promoting the dietetic value of soybean in his alma mater echoing Li Shizeng's recommendations some thirty years before, Wang Shou was certainly aware of the imminent crisis that China was about to face when soybean cultivation in Manchuria was reaching its limits after more than two centuries of cultivation with traditional knowledge and technology. His Cornell lecture took place just before the upward trajectory of Manchurian bean production since the 18th century was about to reverse. A 1936 article in New York Times on soybean as the rising star of American agriculture clearly indicates the forthcoming, almost irreversible trend "Soybeans were the crop which earned the American farmer a \$40,000,000 income last year on a five and three-quarter million acreage. "Soybean" was the name which a few weeks ago went up on the "big board" in the Chicago Board of Trade's latest listing...(soybean) in its new phases of the 1930s seems the entering wedge for a thriving market for American farm products in American industry". American advanced agronomic science experimented on vast and sparsely populated stretches of farm land quickly made the country into the world's leading producer of soybean, replacing China in 1954 (Wang and Guo, 2007).

The rise of American soybeans marked the beginning of a long odyssey for Chinese agronomists like Wang and his peers to regain soybean self-sufficiency for China by boosting productivity with new science. During the first decades of the 20th century, the technique of cross breeding soybeans for creating new high-yield cultivars was mastered mostly by Japanese experts in experiment stations in Manchuria and US scientists

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in America. Wang himself was struggling to develop new breeds in the Nanking region in the 1920s and 1930s applying what he had learned in Cornell to very different local situations and regional cultigens in China, also having to work with insufficient public institutional support under a weak government, and with peasants who were unfamiliar with the science. The efforts were then interrupted by wars, revolutions, and political instability that further delayed concerted efforts until the late 1970s. From the 1980s until today, soybean improvement in China remains to be driven primarily by the need of productivity increase. It is still an enormous uphill struggle: in 2007, the average productivity per *mu* in China was 96.9 kg, which was 55.1 kg below world average. In 2020, China imported more than 100 M tonnes, accounting for 85% of the country's domestic consumption that year and about 60% of the global soybean trade volume. Under such immense pressure, pushing up productivity will certainly continue to be the main target of national soybean research programs. (*South China Morning Post*, 14th January 2022)

There are, however, recent signs that the re-cultivation of soybeans has acquired other meanings than yield increase. Some of the efforts are now applied to the re-cultivation of indigenous strains for the making of heritage soy foods, often deployed in collaboration with local soy food makers and agrobusinesses, a development similar to black bean re-cultivation in Taiwan for the making of a unique type of soy sauce and health foods since the 1990s. Such efforts encourage the participation of wider public sectors and local businesses, as they also serve to preserve agronomic memory by reviving indigenous cultigens, and thus biodiversity, as well as the promotion of local, heritage foods largely defined by the localness of their ingredients, such as the crops. Such movements have already been growing steadily in Japan and South Korea before they started in Taiwan. When soybean is appreciated not only as a money-making cash crop, but especially as an ingredient that defines foods that expresses our identity and culture, the interest of the public in its re-cultivation could be immeasurable, and the impact beyond the economics. (Lian, 1994) The intensity and depth of popular food culture based in no small part on soybean since the 18th century is a strong historical memory. It would be interesting to see if the heritagization of crops and foods in this

post-industrial era will breathe new life into this ancient Chinese food crop with unique traits (Du Bois, Tan and Mintz, 2008).

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