

## Maize in Pre-Columbian China<sup>1–5)</sup>

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A certain Chinese herbal book presented to the emperor in 1505 shows a drawing of maize under the caption of Yiyi-ren (Job's Tears). Also, a Chinese poem written around 1368 contains a term *yumi*, which indicates maize. These new findings offer clear evidence that maize existed in China in the pre-Columbian era, or before 1492. Details of this evidence are discussed here.

**Key words**—maize; pre-Columbian; China

### IN CHINA IN 1505

In the Chinese herbal book *Bencao pinhui jingyao* (or formerly spelled as *Pents'ao p'inhui chingyao*) that was compiled and presented to the emperor Xiao Zong of the Ming Dynasty in 1505, there is a clear illustration of maize, *Zea mays*. It appears in a drawing under the caption of Yiyi-ren (Job's Tears) or *Coix lachryma-jobi* var. *ma-yuen*, or *C. ma-yuen*. The plant on the right is unmistakably maize (Fig. 1).

The book lay dormant, blanketed by a thick coat of dust, in the Imperial Treasure house in Beijing until the collapse of the Qing Dynasty in 1912 and was never exposed to anyone outside the Forbidden Palace. No scholarly dissertation has ever touched on the year of 1505 in which this remarkable book was compiled. Its surprising maize illustration inevitably raises the question of whether maize had existed in China before Columbus, that is, earlier than 1492. Based on this author's findings, discussion will be made here of the likelihood that there was indeed pre-Columbian maize in China.

### DISSEMINATIONS

It has been commonly accepted that Christopher Columbus brought maize from the New World to the Old, whence it spread quickly to almost every corner of the globe. Columbus' return home from his first voyage to America was in March 1493, and it was in 1498 that Vasco da Gama sailed around the Cape of Good Hope, opening a sea route for trade with India. Carried by this tide of world exploration, syphilis

spread swiftly to India and Malacca and, by 1505, just 12 years after Columbus, it had arrived in China.

That same year, 1505, saw the completion of the herbal book in question. Is it probable that maize would have taken root and become widespread in China as quickly – even more quickly, in fact – as the infectious disease? It seems unlikely that any newly introduced plant could have been disseminated so rapidly in such a remote land. Botanists have accepted as fact that maize originated from the American Continent and from nowhere else. Yet the drawing of maize in the 1505 book raises the interesting questions of when, from where, and how, it reached China. It



Fig. 1. Yiyi-ren, *Coix lachryma-jobi* var. *ma-yuen* from *Bencao pinhui jingyao* (1505)

also leads to a reconsideration of the time and routes of dissemination throughout the world of various other produce found by Columbus and his party in the New World.

**Overland Routes** During the Ming Dynasty, China's trade with the West was by way of the Silk Road, traveled primarily by merchants from the west of China.

*Liuqing rizha*, published by Tian Yiheng in 1572, speaks of maize. It was grown in the barbarian region in the west and presented to the emperor in olden times; thus it acquired the name *yumai* — an imperial wheat. As a commodity of trade, maize must have been brought to Beijing well before the middle of the 16th century and presented to the emperor. The fact that maize in those olden days was thought suitable as a gift to the imperial household indicates that it was a novel and valuable product to the people in the West. Ordinary goods would not have qualified as imperial gifts.

Another avenue by which maize could have arrived in China was an India-Burma-Yunnan route. Ho Ping-ti of Canada reports in 1955 that ethnographical accounts of Yunnan such as *Dalifu zhi* (1563) and *Yunnan tongzhi* (1574) record cultivation of maize in six prefectures and two department counties, mostly in the western and northwestern area of Yunnan. This early farming of maize in Yunnan is strong evidence that it was introduced from neighboring countries like India via Burma.

**Sea Routes** In addition to these two overland routes by which maize could have reached China, sea routes must also be considered. Again, Ho reports that maize existed in the early 16th century not only in Anhui Province but also in Jiangsu, Henan, Zhejiang, and Fujian Provinces. Its presence in these locations suggests that maize must have reached China by way of the southeast coast. The 1964 edition of the *Encyclopædia Britannica* tells us that when European ships began to reach the Chinese coast maize was already being extensively grown there and was being taxed by the emperor.

A Spanish missionary, Martino de Rada (or Herra-da), who came to the Chinese coast in 1575 from the Philippines, was the first Spaniard to reach China. His recognition of maize at Zhangzhou in Fujian was cited by another Spaniard, Juan Gonzalez de Mendoza, in 1585. Mendoza said that “mais” and “panico” were cultivated in large quantities and that 25340400

*fanegas* of “mais” were sent by the farmers to the emperor as part of their tax payment. The figures for rice and wheat given by Rada in 1575 and later by Mendoza, in 1585, do not agree with the numbers recorded for 1502 in Chinese documents such as *Huangming shilu* and *Tushu bian*, neither of which record maize. Despite the uncertain accuracy of the numbers, Rada could well have seen an abundant crop of maize in China in 1575, unless he confused it with other crops, like sorghum and millet.

Where did a sea route to China originate? Ferdinand Magellan arrived at the Philippines in 1521 by crossing the Pacific westward. He allegedly found maize on the island of Limasawa near Layte. His chronicler Antonio Pigafetta recorded “miglio, panico and sorgo” among other products of Limasawa. The English translation apparently replaces “sorgo” with “maize”, but the Japanese translator was hesitant to interpret it as maize, saying it could be sorghum, *Sorghum bicolor*. The Magellan party had seen “mais” in Brazil before coming to the Orient. Their identification of the Philippine “sorgo” as being the Brazilian “mais”, however, is not recorded. The present author remains unconvinced that maize existed in the Philippines at the time of Magellan, but the possibility that the plant traveled to China from the Philippines cannot be discounted. Tobacco was to follow this route to China later.

Another possible sea route could have been that taken by Arab traders to such a seaport as Quanzhou in Fujian on the southeast China coast. If the Arabs had obtained maize somewhere west of India, then it would be only logical to conclude that they brought it to their trading posts in South China. In the era of the Tang (618–907), Song (960–1279) and Yuan (1281–1367) Dynasties, Quanzhou was a lively and prosperous harbor for traders. It accommodated as many as 60000 foreign residents, mostly Arabs, during that period. Marco Polo, who visited the town, praised it as one of the two great international trade ports, and it was from there that he sailed for home in 1290.

From the preceding discussion it can be inferred that maize could have taken overland routes to China, by the Silk Road or the India-Burma-Yunnan way, or the sea routes used by the Arabs, or from the Philippines.

## BOTANICAL ACCOUNTS

According to Ho Ping-ti, the first mention of maize in the Chinese literature occurs in *Gongxian zhi* (1555). A visit by the present author in 2004 to Gongxian in Henan confirms that region as today's Chinese Corn Belt.

A recent study by this author suggests an even earlier date of record. There is an amazingly early mention of maize in the poem *Youwu zashu*, written by Xie Yingfan in Jiangnan at the very beginning of the Ming Dynasty (1368–). Xie wrote, “(yellow) gold is like yumi and like pearl.” Here *yumi* can only refer to maize. Literally, *yu* means *jade* and *mi* means *rice*. (The term *jade* and *imperial* are homonymous, *yu*, in Chinese.) This poem may be interpreted to be saying that the imperial capital (Nanjing) is rich with gold, which is as abundant as maize and as lustrous as pearl. In the middle of the 14th century, well before Columbus found it in America, maize was already known in China.

This reference to maize was followed by *Diannan bencao* (or *Tiennan pents'ao*), published by Lan Mao in 1436–49, and by *Julan bencao* by Mu Zhong towards the end of the 15th century, each of which includes an article of yumai-zi or corn-silk, but without illustrations; corn-silk has been used therapeutically in China as a diuretic and a cholagogue. The dates of both publications precede Columbus. These documents are known, however, to have undergone various alterations over the course of time, and it could not be ascertained that corn-silk was an original description or a later addition.

Based on Lan Mao's book, Fan Hong published

*Diannan bencao Tushuo* in 1556, which treated maize in a separate article with an illustration (Fig. 2). This explanation and illustration precede those of *Bencao gangmu* (or *Pents'ao kangmu*, the *Compendium of Materia Medica*) by Li Shizhen (or Li Shihchen) (1578) by 22 years (Fig. 2). Fan Hong's book showed corn-silk as well (Fig. 2).

Since the beginning of the 17th century, maize has been a common item in most botanical textbooks, chronicles and dictionaries in China.

### THE YEAR 1505

The question of why the drawing of maize was shown alongside that of *C. ma-yuen* in the 1505 herbal book, however, remains unsolved. These two plants resemble each other in the shape of their grasses (stems and leaves), as Li Shizhen says. But when it comes to their fruits, maize has the distinctive feature of ears (female or *pistillate inflorescence*), which, although they may have been much more slender in the primitive plants, would preclude its being mistaken for *C. ma-yuen*. The illustration would therefore not have resulted from confusion between the two plants. Yet the compiler must have meant to convey something. The present author could not decipher this riddle. The entire description of Yiyi-ren in this book encompasses only the age-old explanation of Yiyi-ren *per se* with nothing pertaining specifically to maize. Nevertheless, although the question remains unsettled, the maize illustration in the 1505 book can be taken as clear evidence that maize was in China at least a few decades before 1505 – that is, well before Columbus. Or, it was actually known in China before 1368 as the poem showed.



The Jinling edition, 1593 (left), and the 1640 edition (right) of *Bencao gangmu* 1578

*Diannan bencao tushuo* 1556, corn-silk (right)

Fig. 2. Maize

More detailed discussion of this short summation will be presented elsewhere.

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