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ON THE ORIGIN OF RICE AGRICULTURE IN SOUTHERN CHINA AND ITS PROPAGATION IN EAST ASIA

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ABSTRACT: Based on the archaeological rice cultivation with the ^{14}C dating of about 4000-5000 a B.P. the author holds that the plain at the lower reaches of the Changjiang (Yangtze) River is one origin of rice cultivation in Asia and the other is Allahabad of India. The propagation of ancient rice cultivation in China can be divided into three stages, namely 4000-3000, 2635-2420 and about 1000 a B.P. It is inferred that there were two ways for propagating rice cultivation from China to Japan. One was from lower reaches of Changjiang River to Kyushu by sea way and the other was from Shandong Peninsula to southern Korea and then to Kyushu. The age of propagating rice cultivation into Vietnam from South China is about 1000 a B.P. Being influenced by climatic changes since about 5000 a B.P. the propagation of rice cultivation was stagnated for two times at least, for example, the three warm climatic stages and the two cold stages were quite in correspondence with the propagation and stagnation stages of rice cultivation, respectively, in China. During the ancient times the development of paddy rice was directive related to the fluctuation of sea level which is in keeping with the climatic changes.

KEY WORDS: rice agriculture, rice propagation, East Asia

I. ORIGIN

The comprehensive operation of technique, experience and using of farm implements for rice cultivation is called rice agriculture. On the origin place of rice agriculture in East Asia, two points of view can be cited. One is India and Yunnan Province of China and the other is lower reaches of the Changjiang River. The former suggests that the wild rice with strong light sensitization can only be grown in the regions south of 25° N. The latter deduces that the Ningbo-Shaoxing plain and Taihu Lake plain located at the lower reaches

of the Changjiang River are the origin of rice cultivation from some ^{14}C datings of paddy or rice straw in the archaeological traces such as 5,010 ± 100,5,005 ± 130 and 4,775 ± 140 a B.P. in Yuyao, 5,090 ± 125 and 4,995 ± 155 a B.P. in Tongxiang as well as 4,325 ± 205 and 4,065 ± 145 a B.P. in Wuxian county. These data show the oldest rice cultivation about 4000–5000 a B.P.①in China and even in the world. But the unearthed paddy and rice straw from Yunnan Province are only dated at 2,165 ± 105 and 1,470 ± 155 a B.P. and the age of some potteries unearthed with carbonation rice from the northeastern India is also only about 2,000 a B.P.[1].

The author suggests that the lower reaches of the Changjiang River and the northeastern India are both of the origin places of rice cultivation. It is called the opinion of "Double Origin". The archaeological data about the lower reaches of the Changjiang River are mentioned above and the carbonation rices in Mahagara and Koldhiwa of Allahabad, India are dated at 6,570 ± 210–4,530 ± 185 a B.P. and 5,440 ± 240–4,540 ± 185 a B.P., respectively[2]. They are even by 500–1500 *a* earlier than that of the lower reaches of the Changjiang River (Fig.1).

II. PROPAGATION

There are three opinions about the propagation way of rice agriculture from the origin of the Changjiang River plain in East Asia. The south way is Taiwan–Ryukyu Islands–northern Kyushu. However the age of rice pollen and carbonation rice unearthed from Okinawa and southern Kyushu is younger than that of northern Kyushu[3]. The north way is North China–Northeast China–Korea Peninsula–Japan[4,5]. But the analysis result of spore–pollen from 20 boreholes in Korea Peninsula and other archaeological data show that the beginning of rice cultivation has become latter from Kyushu to the south part and then to the north part of Korea Peninsula[3]. The last opinion suggests the east way i.e. the rice cultivation has been propagated by sea way from the origin place to Korea Peninsula and Japan. The author supports the opinion of east way in the light of the following facts.

Rice pollen with ^{14}C dating of 2,880 a B.P. and potteries of about 2,000 a B.P. buried in ancient paddy field have been found in Itatsuki trace of Fukuoka, Japan. Therefore the beginning of rice cultivation during the period between Jyomon and Yayoi i.e. 2,500 a B.P. is inferred[3] and Yayoi epoch (2,300–1,600 a B.P.) is generally called the culture of rice agriculture in Japan. It is deduced that the rice cultivation in north Kyushu may be propagated east forward from the lower reaches of the Changjiang River by sea way directly

① A number of ^{14}C dating data from relative references are quoted in this paper but can not be enumerated in detail in light of the limited space of the paper.

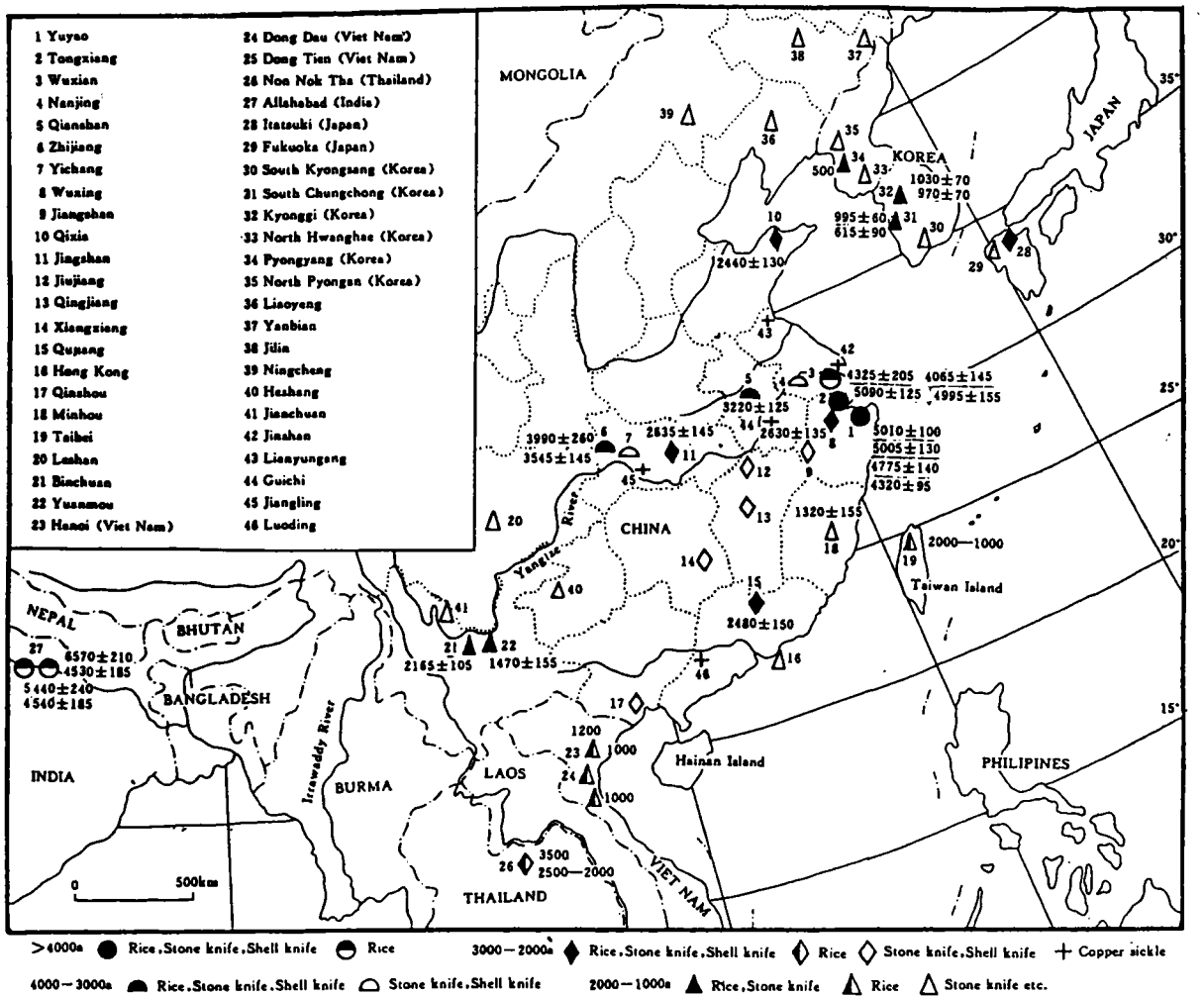

Fig.1 Archaeological data of rice agriculture

and is not from Korea or Taiwan. Because the traces of rice cultivation in Korea are all younger than that in Japan, for example the carbonation rices unearthed from South Chungchong, Kyonggi and Pyongyang are dated at 995–615, 1,030–970 and 500 a B.P.[6] respectively. Besides, the ^{14}C dating of archaeological rice in Qixia of Shandong Province, China is 2,440 a B.P. The data mentioned above and the distribution of iron sickles of about 2000 a B.P. show that the rice cultivation of the Changjiang River plain was propagated to Japan during about 2,500 a B.P. and then through Shandong Peninsula to Korea Peninsula and Japan during about 2,000–1,000 a B.P.

A propagation way of the Changjiang River plain–Taiwan–Ryukyu–Kyushu is not in keeping with the archaeological data because the dating of 2,000–1,000 a B.P. of carbonation rice in Zhishanyan of Taibei[7] is younger than that of Japan.

A number of data of ^{14}C dating reveals the stages of propagation of rice cultivation in China (Fig.1 and 2). In the first stage (4,000–3,000 a B.P.) it was propagated west forward along the middle reaches of the Changjiang River, for example the ages of rice traces are 3,220 a B.P. in Qianshan and 3,990–3,545 a B.P. in Zhijiang. The second stage is about 2,500 a B.P. when the rice agriculture was propagated by north way and south way. The former reached to Shandong Peninsula and the latter reached to Guangdong. Some ^{14}C datings of carbonation rice of 2,480 a B.P. in Qujiang and stone knife of 2,420 a B.P. in Qinzhou are obtained. During the third stage (2,000–1,000 a B.P.) the rice cultivation was propagated to the southeast coastal region and Taiwan, the age of stone knife unearthed from Minhou, Hongkong[8] and Bao'an[9] are dated at 2,000–1,300 a B.P., at the same time, it was propagated to Sichuan, Yunnan and Viet Nam through the west way, for example, the carbonation rices in Binchuan and Yuanmou are dated at 2,165–1,470 a B.P., and that of Hanoi, Dong Dau and Dong Tien, Viet Nam is 1,200–1,000 a B.P.[10].

Besides, it is possible to propagate the rice cultivation from the other origin of India into Southeast Asia because of the datings of 2,300–2,500 a B.P. (carbonation rice) and 3,500 a B.P. (pottery) in Non Nok Tha of Thailand[5].

III. PALEOGEOGRAPHIC BACKGROUND

The cultivated rice is of two kinds, the long-grained nonglutinous rice and the round-grained nonglutinous rice, the latter is fond of relatively cool climate. From the distribution of archaeological rices which are of different age, the period of differentiation of the two kinds of cultivated rice can be recognized. As mentioned above, the trace rice dated at 5,010–4,775 a B.P. in the origin of Yuyao is dominated by the long-grained nonglutious rice, but the trace rice with younger age of 4,325–4,065 a B.P. in Wuxian County is

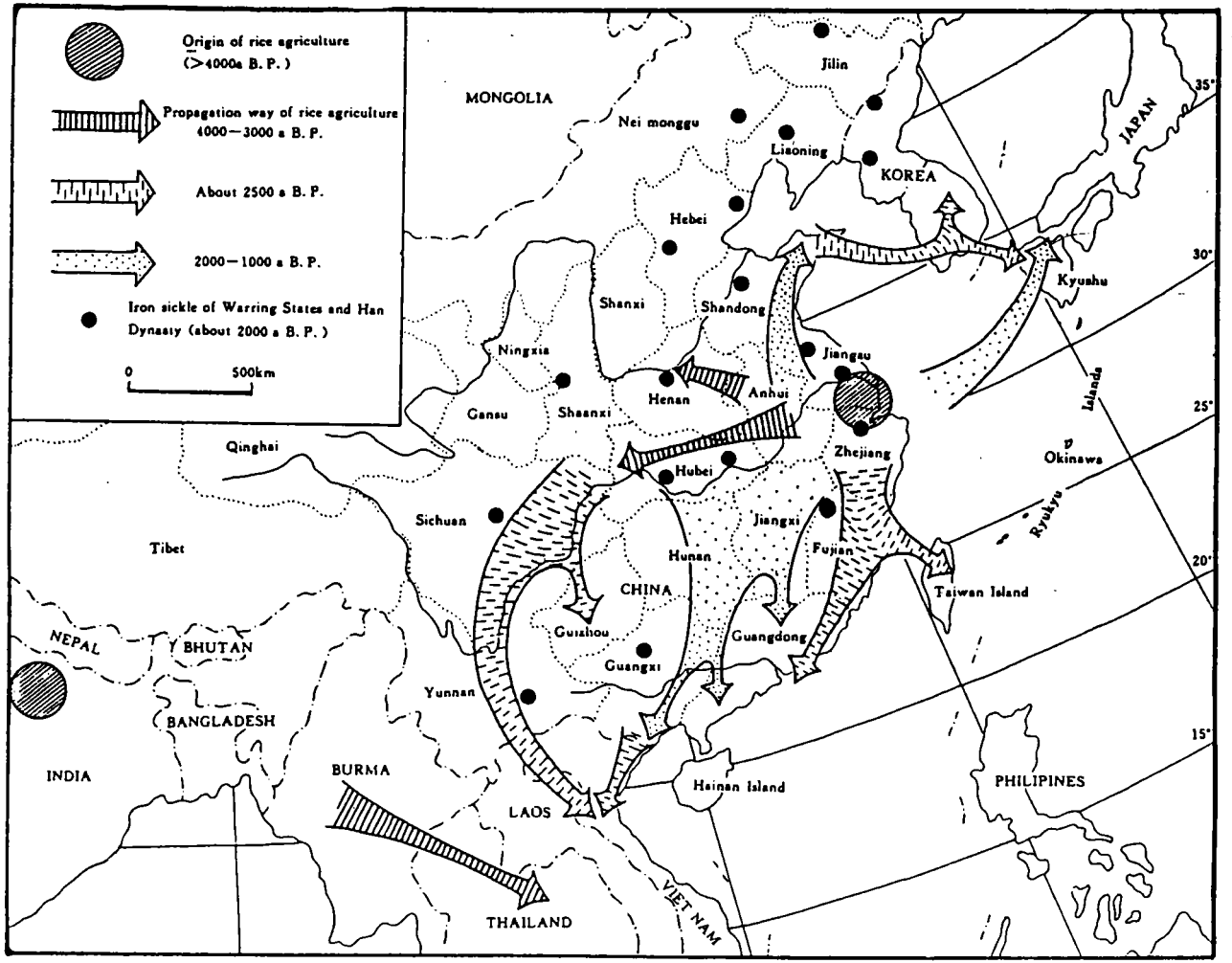

Fig.2 Propagation of rice cultivation