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THE EARLY HOLOCENE ARCHAEOBOTANICAL RECORD FROM THE ZHANGMATUN SITE SITUATED AT THE NORTHERN EDGE OF THE SHANDONG HIGHLANDS, CHINA

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The early Holocene archaeobotanical record from the Zhangmatun site situated at the northern edge of the Shandong Highlands, China

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The New World tropical forest, the Fertile Crescent in western Asia and the eastern part of China are three regions which reveal the longest history of agricultural development and plant cultivation since the early Holocene.

In China, the emergence of rice-based agriculture in the Yangtze River basin and millet-based agriculture in the Yellow River basin have been the focus during recent years. However, detailed and accurately dated archaeological records from China are still rare.

Because of the lack of direct archaeological evidence regarding the utilization and domestication of wild millet species, discovering the origins of millet agriculture in China still remains a challenge. Although early millet cultivation has been reported at several sites which are dating back to about 10,000 years ago, every new site and any additional evidence is valuable for a better understanding of temporal and spatial distribution patterns of early Neolithic agriculture in China. The current

[1] This is a cooperative research among international scientists. They are archaeologists from units in China, including Shandong University (WenWan WU and GuiYun JIN), Jinan Municipal Institute of Archaeology (XingHua WANG), Peking University (XiaoHong WU), and geologists from Free University Berlin, Germany (Pavel E. Tarasov).

study presents the results of archaeobotanical analysis from Zhangmatun site and indicates the subsistence strategies of low level food production and hunting-fishing-gathering.

The Zhangmatun site is situated near Jinan, Shandong Province, between the Yellow River in the north and the Shandong Highlands in the south (Fig. 1).

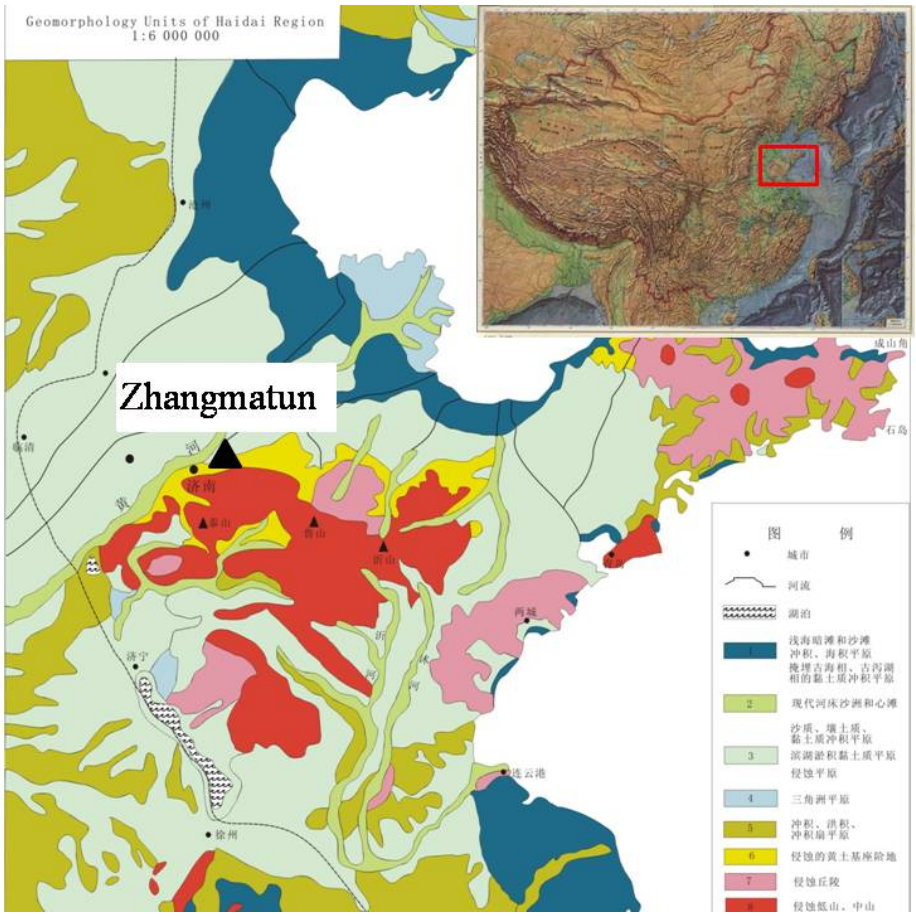

Fig. 1 Location of Zhangmatun site

During the excavation of Zhangmatun archaeological site in 2007, numerous soil samples were collected for recovering plant remains with froth-flotation device. The recovered carbonized plant remains were

studied under a dissecting stereo-microscope and fossil size, external features and internal anatomy were used for identification by comparison with the modern reference collection and published identification keys. The nomenclature follows Floral China.

The chronology of the analyzed record relies on ten AMS radiocarbon dates that came from charred plant remains and soot collected from potsherds. The time interval covered by the dates extends from 7080 to 6460 cal. BC which can be clustered into three groups. The oldest cluster include three dates obtained from the seeds of *Vitis* sp. and one from unspecified organic material and covers the interval 7061-6855 cal. BC.

A total of 1286 charred plant remains were found, of which 1001 were seeds and fruits assigned to 38 plant taxa (Fig. 2). The remaining plant remains could not be identified due to poor preservation and /or lack of clear identification features. Although most of the samples are poor in botanical remains, one sample collected from house F1 was extremely rice in plant remains and showed a high taxonomic diversity and it is the only sample which reveals a potentially cultivated crop, including foxtail millet and broomcorn millet. Poaceae seeds are well represented in the complete record and account for ca. 26% of all the plant remains and most of them can only be identified to the family level. Other herb plants include *Hibiscus trionum* L., *Corydalis* sp., Fabaceae and *Chenopodium* sp. The woody plant taxa seed assemblege includes Ulmaceae, *Swida* sp.,

Celtis bungeana BL., *Grewia biloba* var. *parviflora* Hand-Mazz, *Vitis* sp., *Ampelospsis* sp. and *Prunus* sp.

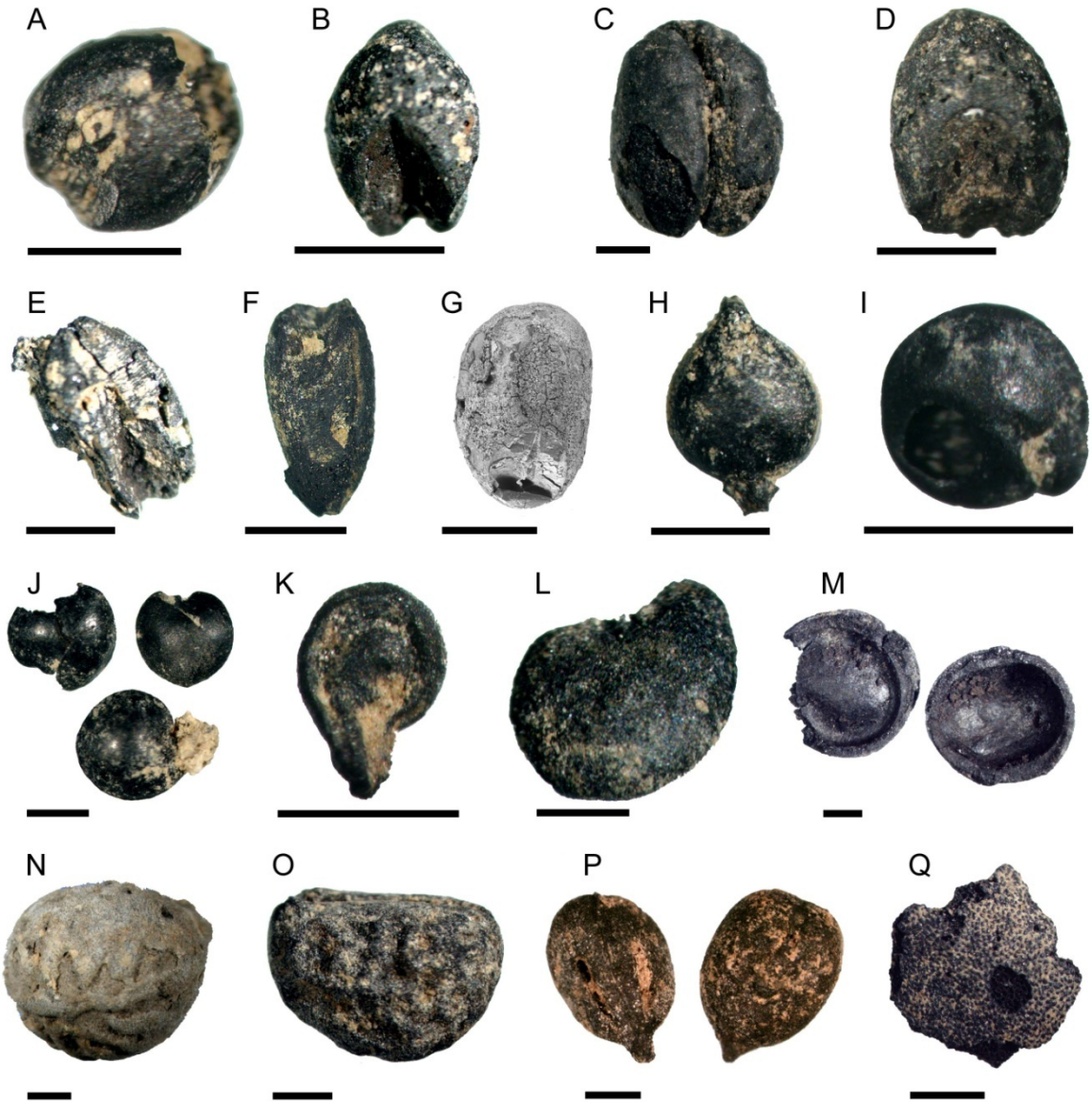

Fig. 2 Some charred seeds from Zhangmatun site

Plant remains from the Zhangmatun site suggest a broad-spectrum of plant resources available to the ancients. Foxtail and broomcorn millet grains are present in low quantities in comparison to the wild plants that

can be interpreted as a relatively low importance of millet production in the human subsistence ca. 9000-8500 years ago. It is obvious that Zhangmatun is rich in wild species, which could be used for different purposes, including food, medicine and fodder.

The comprehensive analysis about the subsistence strategies of the Zhangmatun people is under-going and we are expecting to have some more interesting ideas to understand the early Holocene plant use and agricultural origin in this area, even in China.

Acknowledgements

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