

# Rapid acceptance of foreign food tradition in Bronze Age Europe

August 19 2020, by Claudia Eulitz

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Common millet *Panicum miliaceum* in the open air museum Archäologisch-Ökologisches Zentrum Albersdorf (AÖZA), northern Germany. Credit: Wiebke Kirleis, UFG Kiel

Not just metals, hierarchical societies and fortified settlements: a new food also influenced economic transformations in the Bronze Age around 3,500 years ago. This is evidenced by frequent archeological

discoveries of remains of broomcorn millet (*Panicum miliaceum* L.), a cereal with small, roundish grains. A major study by the Collaborative Research Center 1266 at Kiel University (CAU) was published yesterday (13 August) in the journal *Scientific Reports*. It shows how common millet got onto the menu in Bronze Age Europe. Intensive trade and communication networks facilitated the incredibly rapid spread of this new crop originating from the Far East.

"Wheat, maize and rice now dominate our cereal farming. Millet is regarded as a niche crop suitable mainly for birdseed," explained Professor Wiebke Kirleis from CRC 1266. As this cereal is once more experiencing increasing attention as a gluten-free food, however, it makes the results of the study even more exciting, she added.

Millet was domesticated in north-east China in about 6000 BC and quickly became a staple crop. It is a drought-tolerant, fast-growing cereal that is rich in minerals and vitamins. With a growing time of just 60 to 90 days from sowing to harvest, it was grown by both farmers and pastoralists, and was consumed by both humans and domestic animals. Over thousands of years, pastoral groups spread millet westward from East Asia. The earliest millet in Central Asia comes from archeological sites in Kazakhstan, Tajikistan, Turkmenistan and the Kashmir Valley, and is dated to about 2500 BC.

"In Europe, curiously, broomcorn millet has been found at many Neolithic sites, which date from between 6500 and 2000 BC, depending on the region," said Kirleis. Is it possible that millet was domesticated in China at around the same time? Wheat, barley and our domestic animals were only introduced to Europe thousands of years after they were domesticated in the "Fertile Crescent"—a region extending from the Persian Gulf through northern Syria to Jordan. Was there a special relationship with China? Doubts about this hypothesis arose following the radiocarbon-dating ( $^{14}\text{C}$ ) of a few grains of millet in 2013. These

tiny grains had infiltrated older archeological layers through root channels and earthworm activity. When millet first appeared and was cultivated in Europe remained unknown.

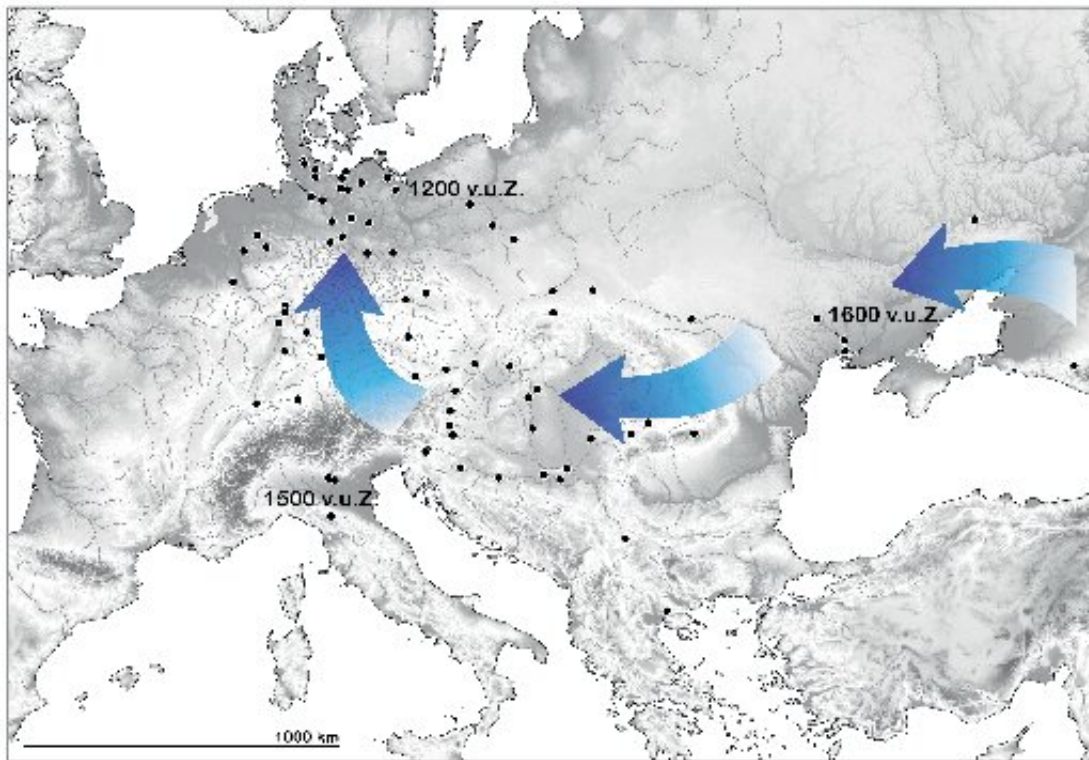


Wiebke Kirleis harvesting common millet *Panicum miliaceum* in the open air museum Archäologisch-Ökologisches Zentrum Albersdorf (AÖZA), northern Germany. Credit: Angelika Hoffmann, UFG Kiel

A group of researchers at the Collaborative Research Center "Scales of Transformation" (CRC 1266), led by Wiebke Kirleis, set out to answer this question. They researched not only the spread of millet cultivation in

Europe, but also focused their attention on the prehistoric population's acceptance of this exotic cereal and examined which agricultural and social phenomena were associated with this innovation.

As millet ripens within three months after sowing, it can be grown as a catch crop between the summer harvest and winter sowing of wheat or barley in central and southern Europe. Further north, it probably served as a reserve crop if late frost had destroyed spring-sown crops. Surplus grain from the extra harvest increased food security and supported a steadily growing population.



Spreading like wildfire: earliest finds and spread of common millet in Europe. Credit: Carsten Reckweg, Janine Cordts and Dragana Filipović, UFG Kiel

Working with almost thirty research institutions across Europe, the archaeobotanists Dragana Filipović and Marta Dal Corso from the team led by Wiebke Kirleis, together with John Meadows from the Leibniz Laboratory for Radiometric Dating and Stable Isotope Research at Kiel University and the Center for Baltic and Scandinavian Archeology (ZBSA) in Schleswig, radiocarbon-dated millet from 75 prehistoric sites (6th-1st century BC). The results show that millet cultivation did not begin in the Early Stone Age, but was first introduced around 1500 BC, and that the new crop spread incredibly rapidly across much of Central Europe 3500 years ago. "This indicates that there were extensive trade and communication networks during the Bronze Age. But the study also shows that [millet](#) was quickly and widely recognized as a versatile addition to the then emmer- and barley-dominated cuisine," concluded Kirleis.

Millet evidently spread along established trade routes for bronze objects (including weapons), gold and amber. These transformation processes of food strategies and their social dimensions are a key issue for CRC 1266. Future research in CRC 1266 will examine what social dynamics were associated with the introduction of this new food in this distinct period of upheaval in European prehistory, as the highly productive and connected world of Bronze Age Europe was also a stage for conflict. Evidence of battles and numerous fortifications are testimony of this.

**More information:** Dragana Filipović et al. New AMS 14C dates track the arrival and spread of broomcorn millet cultivation and agricultural change in prehistoric Europe, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-70495-z](https://doi.org/10.1038/s41598-020-70495-z)

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