

# MULTIDISCIPLINARY INVESTIGATION ON EARLY-MID HOLOCENE WILD CEREALS FOUND AT TAKARKORI (CENTRAL SAHARA)

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## Introduction

Plant macroremains from rock shelters of central Sahara give information about the environmental conditions during the Holocene, and the adaptive strategies of human groups living in the area. Takarkori was excavated by the Italian-Libyan Archaeological Mission in the Acacus and Messak (directed by S. di Lernia, Sapienza University of Rome) and its chronology ranges from *ca.* 10,200 to *ca.* 4,600 cal yr BP (Cremaschi et al. 2014).

## Method

For the morphometrical analysis, fertile spikelets of *Panicum laetum*, *Echinochloa colona* and *Sorghum bicolor* subsp. *verticilliflorum* were selected as representative of different cultural context. 1,600 desiccated specimens, found as 18 “seed accumulations” in the site, were measured using image analysis techniques and data were elaborated by means of Principal Component Analysis (PCA). For the molecular analysis, aDNA was extracted from the spikelets testing different protocols and then was studied by means of the DNA barcoding approach, using four chloroplast markers (*rbcL*, *matK*, *trnH-psbA*, *trnL*). A neighbour joining clustering was performed on the combined dataset of the barcode sequences using the statistical package PAST – PAleontological Statistics. Because of the present-day importance of wild cereals in the Saharan and sub-Saharan regions, ethnobotanical information were investigated from literature.

## Results / Discussion / Conclusion

The archaeobotanical record shows homogeneous typology and uniform size of the spikelets. Moreover, some relations are founded in the comparison with the measures of the relevant modern species. This could be associated with the action of collection of those cereals by the human groups who lived at Takarkori (Fornaciari et al. submitted). Bioinformatic analysis of the aDNA sequences allows to inspect the phylogenetic relationships between the archaeobotanical records and the modern species of African wild cereals (Fornaciari et al. submitted). Next Generation Sequence (NGS) analysis is in progress, and will allow a deeper study of the domestication level, the origin and developing of minor cereals in Africa, eventually helping the archaeologists in understanding changes in cultural trajectories. The specimens found at Takarkori, selected by type, are evidence of a deep knowledge of the plants distributed in the region and of the presence of a small group of wild cereals collected continuously in the area for a very long time. Grains of this wild species are still nowadays essential in the human diet in Africa and are harvested by nomadic people for food, fodder and many other purposes (Mercuri 2008).

## Bibliographic References

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