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IMAGE ANALYSIS APPLICATION ON WATERLOGGED ARCHAEOLOGICAL *PRUNUS* REMAINS FROM A MEDIEVAL CONTEXT IN SARDINIA

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Fruit remains such as cherries, plums, sloes and peaches are frequently recovered from archaeological waterlogged contexts. During an archaeological excavation in the city centre of Sassari (Italy), in 2007, a medieval well, dated at 1330-1360 AD, was discovered. The sediment appeared very rich in waterlogged plant remains and a consistent presence of *Prunus* endocarps, attributed to different species, was recorded (1, 2). Thanks to the exceptional state of preservation of the remains, the morphological and morphometric analysis was performed. The discrimination among *Prunus* species is routinely based on visual evaluations of some traditional morphological characters of the endocarps. Currently, computer vision and image analysis techniques represent a more accurate, reliable and repeatable method to distinguish wild species from cultivated ones (3, 4). Digital images, acquired with a flatbed scanner, were processed and analysed using the image analysis software KS-400 (Carl Zeiss Vision, Germany). A macro, specifically developed to measure endocarps of the *Prunus* L. genus, allowed measuring 33 morpho-colorimetric features and 80 elliptic Fourier descriptors (EFDs).

In this work, the results obtained from the comparison between archaeological endocarps and the modern samples of *Prunus* collected in Sardinia, are presented. A clear statistical discrimination among 17 *P. domestica*, 111 *P. domestica* subsp. *insistitia* and 130 *P. spinosa* archaeological endocarps, was achieved. Moreover, from the comparison with the modern endocarps samples, the medieval ones were correctly identified with an overall percentage of 98.4 %.

The LDA applied an archaeological *Prunus* endocarps preserved in waterlogged contexts have allowed us to investigate the taxonomic level of *Prunus* species present in the medieval period in Sardinia.

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