INTRODUCTION

The Sardinian wine-growing heritage consists of 151 cultivars (Lovicu et al. 2010). Considered as local varieties, they are the product of different events, such as direct domestication of wild grapes, crosses between local varieties and the importation of agricultural techniques and cultivars from different ethnic groups that colonised the Island (De Mattia et al. 2007). The finding of many seeds of the genus Vitis L. in many Sardinian archaeological sites as well as Douss Nuraghes, Demma Maria, Nuraghe Ortu Comili and Nuraghie Toscano (Bakels 2002), referable to the Bronze Age are a direct testimony (Orru et al. 2013). During a recent archaeological excavation in April 2008 close to S’Arribeddu and the village of Cabras, Province of Oristano (Fig. 1), rich deposits of the pre-Nuragic and Nuragic settlement of Sa Osa were recovered (Usai 2011). Within the site, three different structures (Shaft N, U and V) (Fig. 2) were identified and excavated in sandstone sediments to a maximum depth of 4.35 m (Melis and Sechi 2011; Serreli 2011). The shafts contained, in different stratigraphic units, numerous organic materials including wood, charcoal, cork, seeds (mostly Vitis), animal remains and pottery (Fig. 3) helpful for dating it to the final and recent Bronze Age (Usai 2011; Sanna 2011). The aims of this work are: (1) to measure morphological parameters and Ethic Fourier Descriptors to characterize the collected seeds belonging to V. vinifera and V. sylvestris; (2) to build a database to compare the archaeological remains with the recent seeds of both species; (3) to identify the relationships between the archaeological unknown seeds and V. vinifera and V. sylvestris materials, using Linear Discriminant Analysis (LDA).

MATERIALS AND METHODS

Seeds (85926) of 115 native cultivars of V. vinifera representative of the agrodiversity of the Sardinian Island were collected in the AgriS germplasm collections (Agenzia per la Ricerca in Agricoltura della Regione Sardegna) of Ussana (Sardinia, Italy) while the other seeds were collected according to ethnic scientific criteria (Guerino et al. 1996; Bacchetta et al. 2008a; Venora et al. 2007) from 13 natural population of wild grapevine (3652 seeds) presents into Sa Osa complex, wild and domestic grapes of the different territories of Sardinia have been collected and compared in order to have more clear classification and discriminations of archaeological material object of this study.

RESULTS AND CONCLUSION

A total of 93 morphological quantitative variables describing seed size and shape were measured and then analysed by stepwise LDA, to implement statistical classifiers able to distinguish the studied cases (Bacchetta et al., 2008b) as successfully applied in another archaeobotanical study (Orru et al. 2013). Using this model, a preliminary comparison among the seeds of V. vinifera, V. sylvestris and archaeological seeds found into three shafts (N, U, V) from Sa Osa complex highlighted a different percentages of correct identification for the unknown seed lots (archaeological seeds). The table 1 shows that the archaeological seeds contained into Shaft U were grouped for 50% in the V. vinifera and 50 % in V. sylvestris; the Shaft V seeds were grouped for 37.7 % in the V. vinifera and 66.3 % in the V. sylvestris while the seeds collected in the shaft N were grouped for the 98.4% in the V. vinifera and in the V. sylvestris for 1.6% confirming the results obtained in the precedent study (Orru et al. 2013). In this work the EFDs proved to be very helpful discriminating and comparing the seeds of V. vinifera, V. sylvestris with those of the three shafts of the same archaeological complex. A slight but not explicit similarity of the archaeological seeds of the N and V shaft are grouped into V. vinifera, while the low percentages of correct classification of the unknown Shaft U seeds showed the great morphological variability of the archaeological seeds. Currently, data from new acquisitions of archaeological seeds of the Sa Osa complex, wild and domestic grapes of the different territories of Sardinia have been collected and compared in order to have more clear classification and discriminations of archaeological material object of this study.

REFERENCES

Kenward H. 1990. A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. Science and Archaeology 3-15