

FLORA ANTIQUA:
PLANTS AND PALEO-ENVIRONMENT
IN CENTRAL MEDITERRANEAN COLONIES

Claudia Moricca - Laura Sadori - Sapienza University of Rome

This study represents a review of archaeobotanical data available on Central Mediterranean sites between 1600 BC and the 5th century AD. Plant fossils allow us to analyze past vegetation, paleodiets and human-driven changes on the environment, such as the introduction of new plants.

Keywords: past environment; food plants; central Mediterranean; introduced plants; archaeobotany

1. INTRODUCTION

What did the ancient environment look like? Was it subjected to human influence? These are just few of the numerous questions that can be answered through archaeobotany, the study of plant remains retrieved from archaeological sites. This discipline includes the study of macro-remains (such as seeds, fruits, wood, and charcoals) and micro-remains (like pollen and phytoliths) to reconstruct past environments, economies, and societies.¹

For this paper, we collected data from the 103 sites included in the PRIN “Peoples of the Middle Sea” project between 1600 BC and the 5th century AD. So far, only 40 of these have been subject to the analysis of plant macro-remains (fig. 1). This list is expanded of two extra sites (Gozo - Malta; Tyre - Northern Levant) when taking in consideration palynological evidence.

Out of the entire Mediterranean basin, the least represented areas from an archaeobotanical point of view are North Africa (three out of thirteen selected sites) and the Iberian Peninsula (three out of twenty-two). In contrast, all Southern Levantine sites selected for this project have provided data.

In this paper, we will focus on the Central Mediterranean, including insular and peninsular Italian, Maltese, and North African sites. Being in the heart of the Mediterranean, this area was influenced both from the east and west.

2. PAST ENVIRONMENT

The Levantine routes which developed towards the west starting from the 2nd millennium BC were articulated along the coasts of the Mediterranean Sea.² Settlements had a very distinctive nature, being founded on rocky promontories or on small islands in front of the coasts, where it was easy to fortify and defend oneself in case of siege.³ These geographical characteristics, including the proximity of the sea, also heavily influenced the past vegetation, which can be described as dominated by the Mediterranean maquis. Charcoal data, usually giving indications about the arboreal species available in surrounding environment, are available from six of the Central Mediterranean sites taken in

¹ Weiss - Kislev 2008.

² Moscati 1988.

³ Moscati 1988.

analysis (Lylibaeum,⁴ Monte Polizo,⁵ Motya,⁶ Pyrgi,⁷ Tharros⁸ and Utica⁹). All these testify the presence of *Olea europaea* L. (olive) and *Quercus* evergreen (evergreen oak) charcoals. In Lylibaeum, Motya and Utica, *Chamaerops humilis* L. (Mediterranean dwarf palm) charcoal fragments are also present. Charcoal fragments of shrubs, such as *Erica arborea* L., *Phyllirea* sp. and *Pistacia lentiscus* L. help to shape the past environment in the sites of Motya, Tharros and Utica. Elements of riparian vegetation (*Quercus* deciduous and *Ulmus* sp.) are present at the site of Monte Polizo (found ca. 700 m a.s.l.) and Pyrgi, the northernmost site included in the database, where *Ostrya carpinifolia* Scop., *Populus* sp., and *Salix* sp. wood fragments were also recovered. It is also interesting to observe the changes in vegetation at Motya denoted by anthracological remains of shrubs, such as *Erica arborea* and *Juniperus* sp., no longer present due to land over-exploitation and aridification.¹⁰

Palynology is a great tool to reconstruct past environments, also at a wider scale, and is particularly useful when no other plant fossils are recovered. This is the case of Tas-Silġ (Malta),¹¹ where pollen spectra describe a degraded and weedy landscape with cereal vegetation starting from the Borg in-Nadur phase (ca. 1550 BC). Changes can be observed through time, such as the decline of lower plants in the Hellenistic/Roman period, indicating the disappearance of the shady water-rich environment that characterized the previous periods. An open landscape, with scarce to no tree cover, characterized by anthropogenic pressure is described through palynology on sediments of a disposal pit at Motya (8th-6th centuries BC).¹² A similar description can also be obtained from the Punic channel at Carthage (Tunisia),¹³ where taxa characteristic of the Mediterranean maquis (e.g., *Arbutus* sp. and *Phillyrea* sp.) are only observed in the pollen record. A detailed palynological study was performed on a marine core from the Mistras lagoon adjacent to Tharros (Sardinia, Italy),¹⁴ whose analysis allowed to reconstruct 3700 years of environmental history of the area. Pollen diagrams suggest a relatively open vegetation with extensive stands of evergreen woodland and shrubland in the 2nd and 1st millennia BC, accompanied by a remarkable increase in synanthropic indicators. Other palynological evidence from Sardinia date to the Punic period at the site of Cagliari,¹⁵ where the past landscape was characterized by Mediterranean forests with juniper and pines, and holm and corks forests. Also here, anthropogenic pressure and agricultural activities are evident.

⁴ Madella 1999.

⁵ Stika - Heiss 2013.

⁶ Moricca *et al.* 2020; 2021.

⁷ Coccolini - Follieri 1980.

⁸ Nisbet 1980; Acquaro *et al.* 2001.

⁹ Rodriguez-Ariza *et al.* 2021.

¹⁰ Moricca *et al.* 2021.

¹¹ Hunt 2015.

¹² Moricca *et al.* 2021.

¹³ van Zeist - Bottema - van der Veen 2001.

¹⁴ Di Rita - Melis 2013.

¹⁵ Buosi *et al.* 2017.

3. FOOD PLANTS

Carpological analyses are particularly useful for reconstructing past diets. *Olea europaea* (olive) and *Vitis vinifera* L. (grapevine) are the most common food plants in the central Mediterranean sites object of the present study, with each being attested with an 81.8% ubiquity. Seed/fruit findings can be supported by palynological and anthracological data to assess local cultivation. Viticulture can be advanced, for example, for the site of Motya, where charcoal¹⁶ and pollen¹⁷ findings support the carpological evidence. Nonetheless, *Ficus carica* L. (fig) is also a common fruit crop in our study area (54.5% ubiquity).

Cereals were certainly staple foods for the “People of the Middle Sea”. Our data show a preference for *Triticum aestivum/durum* (naked wheats; 54.5% ubiquity), followed by *Hordeum vulgare* L. (barley; 45.5% ubiquity) and *Triticum turgidum* subsp. *dicoccon* (Schrank) Thell. (emmer; 36.4% ubiquity). Palynological data attest cereal cultivation/processing at the sites of Tharros,¹⁸ Cagliari,¹⁹ Motya,²⁰ and Tas-Silġ.²¹ Pulses, such as *Vicia faba* L. (fava bean; 36.4% ubiquity), *Vicia lens* (L.) Coss. & Germ. (lentil; 27.3% ubiquity) and *Lathyrus oleraceus* Lam. (green pea; 18.2% ubiquity), certainly comprised another important element of human diets.

3.1. *Taxa whose spread was favored by Phoenicians*

Other than the presence of olives and grapes, and the subsequent production of oil and wine, the impact of Phoenicians in the central Mediterranean can clearly be seen by the gradual introduction of plant taxa originally from the east, but also presumably from the west. Below are a few examples (fig. 2).

3.1.1. Pomegranate (*Punica granatum* L.)

Indigenous to the Middle East, the pomegranate spread across the Mediterranean thanks to human influence. A symbol of fertility, abundance, perfection, and sanctity,²² it was present in the Levant at least since the Bronze Age, as attested by carpological remains at Jericho.²³ Its earliest anthracological findings towards the west are in the Borg in Nadur phase at Tas-Silġ,²⁴ while waterlogged seeds were found at Huelva (9th-8th century BC),²⁵ followed by six exocarp fragments in pit F.1112 at Motya (mid-7th century BC).²⁶

¹⁶ Moricca *et al.* 2020.

¹⁷ Moricca *et al.* 2021.

¹⁸ Di Rita - Melis 2013.

¹⁹ Buosi *et al.* 2017.

²⁰ Moricca *et al.* 2021.

²¹ Hunt 2015.

²² Nigro - Spagnoli 2018.

²³ Hopf 1983.

²⁴ Fiorentino - D’Oronzo - Colaianni 2012.

²⁵ Pérez Jordá *et al.* 2017.

²⁶ Moricca *et al.* 2021.

3.1.2. Almond (*Prunus dulcis* [Mill.] D. A. Webb)

Another fruit tree whose spread was favored by the “People of the Middle Sea” is represented by almond, native of Central Asia.²⁷ Present in the Levant since the Middle Bronze III,²⁸ *Prunus dulcis* appears in Kommos (Crete) during the Late Minoan II.²⁹ Like pomegranate, carpological remains of almond are attested in 9th-8th century BC Huelva.³⁰ The first evidence of *P. dulcis* in Sicily dates to the 7th-6th century BC in Monte Polizo.³¹

3.1.3. Mediterranean stone pine (*Pinus pinea* L.)

While almond and pomegranate are native of the east, the origins of *Pinus pinea* are harder to trace due to its extremely low genetic variability across the Mediterranean basin.³² Nonetheless, its spread seems to have occurred in the opposite direction, from west to east, with fossil evidence in Neanderthals caves and rock shelters in the Iberian Peninsula.³³ Amongst our study sites, the first attestations of the Mediterranean stone pine come from the site of Huelva (9th-8th century BC),³⁴ followed by those in Early Punic Lixus (8th century BC).³⁵ Contemporaneous is the retrieval of a nutshell fragment and a bract at Motya (mid to second half of the 8th century BC).³⁶

4. FINAL REMARKS

An overview of available archaeobotanical data on Central Mediterranean sites between 1600 BC and the 5th century AD has allowed to successfully reconstruct aspects related to past vegetation, paleodiets and human interactions with the environment. The “People of the Middle Sea” chose sites along seacoasts, usually characterized by an open environment and Mediterranean maquis vegetation. Pollen evidence testifies complex anthropogenic activities, such as cultivation and grazing.

The plant components of past Mediterranean diets were cereals (mainly naked wheats, barley, and emmer), pulses (such as faba beans, lentils, and green peas) and numerous fruits. Amongst these, are plants introduced from the East (e.g., pomegranate and almond) and from the West (e.g., Mediterranean stone pine) thanks to maritime trade.

A better understanding of human-plants interactions could be achieved through further archaeobotanical analyses, covering a greater number of sites and longer timespans.

²⁷ Javaid *et al.* 2019.

²⁸ Liphshitz 2000.

²⁹ Shay - Shay 1995.

³⁰ Pérez Jordá *et al.* 2017.

³¹ Stika - Heiss 2013.

³² Mutke *et al.* 2019.

³³ Mutke *et al.* 2019.

³⁴ Pérez Jordá *et al.* 2017.

³⁵ Grau Almero - Pérez Jordá - Iborra Eres 2010.

³⁶ Moricca *et al.* 2021.

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Fig. 1 - Archaeological sites included in the PRIN “Peoples of the Middle Sea” project with archaeobotanical data dated between 1600 BC and the 5th century AD. From west to east: 1. Castro Marim; 2. Huelva; 3. Lixus; 4. Ibiza; 5. Tharros; 6. Monte Sirai; 7. Othoca; 8. Nora; 9. Cagliari; 10. Utica; 11. Carthage; 12. Pyrgi; 13. Lylibaeum; 14. Motya; 15. Monte Polizzo; 16. Selinus; 17. Pithejousai; 18. Vivara; 19. Tas-Silg; 20. Kommos; 21. Khaniale Tekke/Knossos; 22. Maa Palaeokastro; 23. Thebes; 24. Tamassos; 25. Kalavastos-Ayios Dhimitrios; 26. Idalion; 27. Kition; 28. Enkomi; 29. Salamis; 30. Dor; 31. Tell Keisan; 32. Megiddo; 33. Horvat Rosh Zayit; 34. Kharayeb; 35. Tell Buraq; 36. Sidon; 37. Porphyreon; 38. Jericho; 39. Ugarit; 40. Afqa.

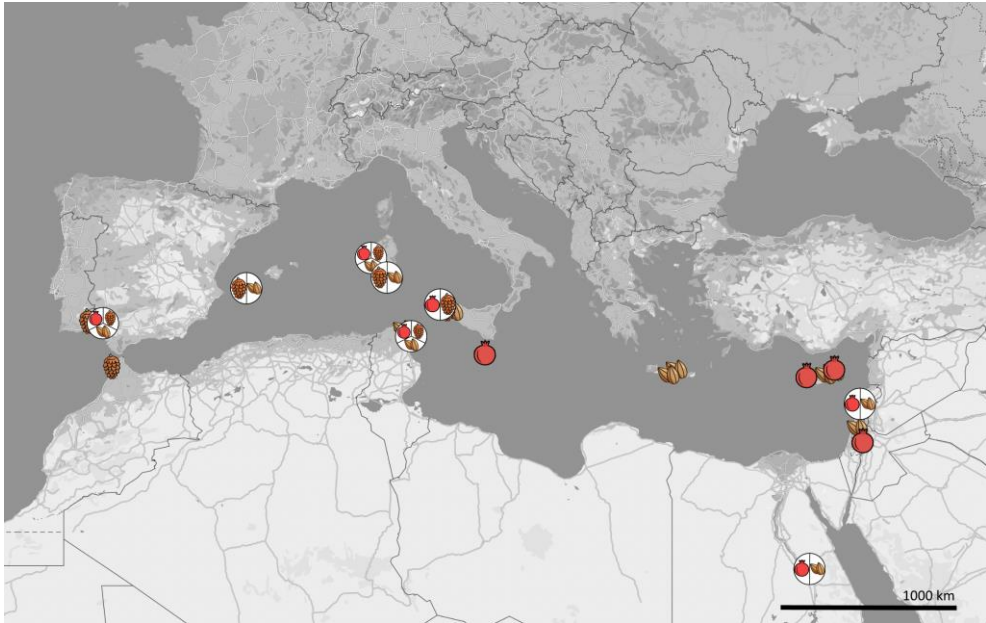


Fig. 2 - Carpological findings of selected plant species (in chronological order). *Punica granatum*: Jericho (Middle Bronze III), Thebes (18th Dynasty), Huelva (Early Iron Age), Motya (Orientalizing period), Tell Buraq (Iron Age III), Tharros (Iron Age IIB), Carthage (Middle Punic II), Salamis (Cypro-Classic II); *Prunus dulcis*: Kharayeb (Late Bronze II), Kommos (Late Minoan I), Khaniale Tekke/Knossos (Proto Geometric), Huelva (Early Iron Age), Tell Buraq (Iron Age III), Monte Polizzo (Archaic Period), Ibiza (Late Iron Age), Salamis (Cypro-Archaic II), Cagliari (Punic period), Carthage (Middle Punic II), Idalion (Hellenistic period), Othoca (Roman period); *Pinus pinea*: Huelva (Early Iron Age), Lixus (Early Punic I), Motya (Iron Age), Ibiza (Late Iron Age), Carthage (Middle Punic II), Cagliari (Punic period), Othoca (Punic period), Lylibaeum (Hellenistic period).