

Plants and people in prehistoric Northern Greece: the archaeobotanical evidence

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Abstract

The interaction of agricultural communities of prehistoric Greece and their natural environment since the early 7th millennium B.C. lead to the emergence of various anthropogenic landscapes consisting of the settlements themselves, fields and pastures as well as managed woodland. The relationship between plants and people during the millennia of Neolithic and Bronze Age habitation in northern Greece (7th-2nd millennia BC) is explored based on the actual remains of plants used by prehistoric people in the region, incorporated in the archaeological deposits and retrieved through intensive archaeobotanical sampling. Plant species that were cultivated and stored for food, medicine, fodder, fuel, clothing etc are discussed as well as changes in the range of species used through time. Insights of prehistoric culinary practice are possible in exceptional cases, thus linking crop fields to prehistoric kitchens. Moving from the settlements to their surrounding landscape, fields and crop husbandry practices, wild plant exploitation and the formation of pastures are also explored through the rich archaeobotanical record of northern Greece.

Background

This study presents snapshots of the life of prehistoric people living in Greece through the remains of the vegetation that surrounded them and the plants they used. A rich variety of plants that people used in the prehistoric past of Greece is explored, some of which constitute plant ingredients no longer used by modern Greeks while others represent important elements of our daily and festive meals. The archaeological evidence on which this paper is based corresponds to the archaeobotanical assemblages retrieved from Greek prehistoric sites. These plant remains are preserved within archaeological deposits mainly through charring, e.g. generated through contact with fire during conflagration episodes or in other, daily contexts. Thus, charred plant remains are likely to be preserved in the archaeological record when houses are burnt or in rubbish pits or in ashy layers and hearths when people needed fire to cook or to burn refuse or to light a household or a festive fire. As these remains are usually not visible during excavation, soil samples are systematically collected from different contexts during excavation and processed with a special flotation machine commonly known as the water sieve

(Figure 1). In this way the charred plant remains from prehistory are trapped in special sieves and the remains of plants intended for use 7000 years ago end up in front of stereomicroscopes for further study.

Archaeobotanical remains in Neolithic Greece

The first farming communities appear in Greece in the 7th millennium BC and we know that these farmers lived in villages, built houses using wood, mud and stones, made pottery, cultivated cereals and pulses and kept animals such as goats, sheep, cows and pigs [1]. The archaeobotanical remains retrieved from the excavated settlements where these Neolithic communities flourished in Greece until 3500 BC reveal a wide range of plants that were used to cover various needs such as food, fuel, building material and ingredients for ceremonies. As regards the human impact on natural vegetation during the Neolithic (7000-3500 BC), pollen diagrams suggest that clearance of natural vegetation for opening of fields and pastures was small scale and remains largely undetectable through pollen diagrams [2]. It is thus legitimate to envisage the presence of clearings where small fields were opened around the Neolithic villages together perhaps with fallow fields and small clearings for pasture, among a dense forest dominated by deciduous oaks and pine trees. The study of seeds preserved in a charred state in archaeological animal dung may in cases provide insights of animal grazing patterns: the data indicate the practice of stubble grazing, of grazing patches of natural vegetation around the settlements and possibly of seasonal movement away from settlement [3]. Different settlements provide information on different practices suggesting a variety in human plant interactions in different areas of Greece, dependent on the interaction of cultural, subsistence and natural factors. Among charred archaeobotanical assemblages from Late Neolithic settlements of Greece the fruits of *Cladium mariscus* indicate the presence of pools with clean water near the settlements [4].

Diversity of plants in the archaeobotanical record

During the Neolithic, a wide range of plants were consumed: cereals, pulses, fruits, nuts and other plants harvested from the wild. The preferred wheats were the glume wheats, einkorn (*Triticum monococcum*) and emmer (*Triticum dicoccum*) and a type of wheat that resembles *Triticum timopheevii* that in recent times was only known to farmers in Transcaucasia (Figure 2). The wheats we use today had a very limited presence in Greece during the Neolithic. Barley (*Hordeum* sp.) is also common among prehistoric agricultural communities of the region. In the north of Greece we think that their preferred wheat was einkorn wheat. The available evidence so far suggests that these cereals reached Greece from the East, Anatolia and the Fertile Crescent or further east in the case of *Triticum timopheevii* [5]. Due to the presence of hulls around the glume wheat grain that are not removed during threshing, winnowing and sieving, the neolithic wheat species would have required special processing for the removal of the glumes that tightly surround the grain by pounding, winnowing and hand cleaning, a time consuming, hard job unnecessary for the *durum* and bread wheats we use today e.g. [6].

Besides cereals, pulses are a very common find at Neolithic sites. A wide variety of species was used: lentils (*Lens* sp.) are the most common find but peas (*Pisum* sp.), bitter vetch (*Vicia ervilia*) and grass pea (*Lathyrus sativus*) were also used (Figure 3).

Bitter vetch and grass pea would have had to be processed by soaking and discarding the water because both are toxic and grass pea can cause paralysis, especially to male populations when consumed on a regular basis for a long time [7]. Grass pea is still used nowadays in Greece in the form of 'fava' and can be bought in supermarkets. A plant with many uses, flax, is well represented in the archaeobotanical record of Neolithic Greece.

Linseed could of course have been eaten, the seeds could have been used to extract oil or for their medicinal properties while the plant could have been used for its fiber [8].

A significant contribution to diet and other needs was made by wild fruits and nuts which would have certainly provided culinary variety to the combination of cereals and pulses. Wild pistachio (*Pistacia terebinthus*), acorns (*Quercus* sp.), grapes (*Vitis vinifera*), figs (*Ficus carica*), blackberries (*Rubus fruticosus* agg.) and elderberry (*Sambucus* sp.) were gathered and consumed. Acorns had to be processed in order to be palatable as they are usually bitter. Some of the fruit could have been dried for consumption throughout the year. This is indicated by finds of whole figs, probably dried at various sites. Regarding grapes, grape pips occur at all Neolithic settlements and indications for wine making from Dikili Tash, near Kavala in northern Greece are among the earliest in the Old World [9]. In a house destroyed by fire towards the end of the 5th millennium BC numerous charred grape pressings were found. They consist of grape pips loose or surrounded by grape skins and prove the extraction of grape juice in Neolithic times (Figure 4). The pips morphologically resemble those of the wild *Vitis vinifera* [10]. It is tempting to imagine that this juice was fermented into wine and although other uses are also possible, like must and vinegar, the cups that have been found at the site could be linked to an alcoholic beverage.

The Neolithic inhabitants of Greece consumed these species from the 7th until the 4th millennium BC. With the end of the Neolithic and the beginning of the Bronze Age, new plant species are introduced, which many brought from the north but originating from the western Mediterranean, central Europe and the steppes of northeastern Europe and central Asia. Other plants have a Mediterranean origin while some reach Greece from the East [3].

Spelt wheat (*Triticum aestivum* subsp. *spelta*) is the wheat that probably reached Greece from central Europe during the 3rd millennium BC. Millet is a common find in the north of Greece during the end of the Bronze Age, i.e. the end of the 2nd millennium B.C., introduced to the region from the north. Opium poppy (*Papaver somniferum*) has a western Mediterranean origin. Pulses like Celtic bean (*Vicia faba*), *Lathyrus clymenum* and *Lathyrus ochrus* have a Mediterranean origin, the last two from islands of the Aegean, still grown today on a limited scale, their cultivation becoming gradually extinct [3]. *Lallemantia* sp. (Figure 5) is particularly interesting because it appears in Europe for the first time during the Early Bronze Age, in the beginning of the 3rd millennium BC at sites of northern Greece [11]. It continues to be used throughout the Bronze Age. This plant genus has an origin in Transcaucasia and Iran where it is used for its oil rich seeds and for medicinal purposes. Its oil is edible, rich in ω -3 fatty acids, and is also used for the preparation of paints. All these plants reached Greece through contacts with regions to the north and the

East, through exchange networks and networks involving the movement of people, perhaps brides bringing plants from their natal places to their new homes.

The olive, *Olea europaea*, essential to our modern concept of Mediterranean landscapes and cuisine, appears in the archaeobotanical record of southern Greece during the 4th millennium BC and is increasingly detectable in the archaeobotanical record of the south during the Bronze Age. Of course the olive stones found within archaeological deposits cannot be identified as wild or domesticated. The olive is absent from the north, which makes sense as the climate there is not ideal for olive cultivation. Yet, we know that the inhabitants of the north had a wide range of plants producing oil rich seeds that could be used for oil extraction [8]. It is difficult to say whether oil was used as food or for other purposes, for example the preparation of perfume. It is again from the south of Greece and through the texts of Linear B that we know that perfumed oil was produced. This oil was probably used in religious ceremonies [12]. The earliest archaeobotanical finds that attest the preparation of olive oil date to the 2nd millennium BC and have been found at Chamalevri and studied by Sarpaki et al. [13]. Some of the new plants that appear during the Bronze Age, like mustard, opium poppy, gold of pleasure (*Camelina sativa*), coriander (*Coriandrum sativum*) and *Lallemantia* sp. have oil rich seeds as well as aromatic, psychotropic and or medicinal properties [11, 14].

Besides this wealth of evidence for the addition of new plants in the repertoire of prehistoric ingredients, archaeobotanical research shows that the Neolithic tradition of using grape juice continues to be evidenced in the Bronze Age on the basis of finds at Toumba Thessalonikis and Myrtos in Crete [14, 15]. We are also informed that people were grinding cereals to make foodstuffs such as cracked wheat, bulgur, trachanas or flour [7, 16, 17]. The macroscopic examination of ground cereal fragments from Mesimeriani Toumba (end of 3rd millennium BC) in northern Greece, as well as the use of scanning electron microscopy, show that einkorn wheat had been boiled and then ground in a preparation similar to bulgur (Figure 6). At Archondiko ground barley was probably formed in lumps, and we are trying to find out whether this barley had been precooked, like the Cretan Xinochondros.

Human impact to natural vegetation

As regards the impact of human activity to natural vegetation, the Bronze Age witnesses a considerable reduction of the natural forest, probably as a result of more intensive and extensive cultivation and grazing. This is visible in natural vegetation reconstructions in pollen diagrams. As with the various crops mentioned earlier, during the end of the Bronze Age new tree species are detected in pollen diagrams such as the walnut, chestnut and plane trees [2].

Conclusions

This brief overview of plants that people used in Neolithic and Bronze Age Greece allows us to reconstruct aspects of their daily lives. We can imagine them in their fields and in their kitchens, clearing dense vegetation to open up fields, spending long hours of weeding in the fields, tending their animals and securing pasture, harvesting and processing their crops. We can suspect their desire to produce nutritious meals from basic plant ingredients for their daily meals as well as for

special occasions marking specific moments in the life cycles of the community and its individuals. Although it is impossible to reconstruct a recipe book of prehistoric times, to grasp how people combined various foods, how sweet was their wine, who drunk it, when and in what quantity, although we cannot evoke the smells, tastes and texture of prehistoric meals who have disappeared together with people who tasted them, our exploration of the plants used by these people of the Neolithic and Bronze Age reveals to us the plant ingredients used in prehistoric times and sometimes the steps they may have followed to transform them to dishes. Their prehistoric meals contained ingredients we still eat today in our homes or in tavernas. Bulgur, the 'fast food' of prehistory, is still popular and reviving through the re-discovery of the so-called Mediterranean cuisine. Lentils, peas and grass pea are also prominent in our cuisine while other ingredients like the glume wheats and *Lallemantia* have totally vanished although their cultivation is revived by modern small-scale farmers. As for the landscapes they inhabited, many are long gone: the dense forests, the fields of flax turning blue when in flower, the fields of opium poppy turning purple, the extensive marshes and pools of very clean water. Their remains however, captured within the archaeological deposits witness to their presence in prehistoric times.

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Figure 1. Flotation machine for the retrieval of charred plant remains from Late Neolithic Makri (second half of 6th millennium B.C.)



Figure 2. Einkorn wheat grain from Archondiko, end of 3rd millennium B.C.



Figure 3. Grass pea seeds from Kremasti Koiladas in Kozani, 5th millennium B.C. (after Valamoti [7])



Figure 4. Grape pressings from Dikili Tash, end of 5th millennium B.C.



Figure 5. Conglomeration of charred *Lallelantia* sp. seeds from Archondiko, end of 3rd millennium B.C.



Figure 6. Ground einkorn grain from Mesimeriani Toumba, end of 3rd millennium B.C.

This paper provides an overview of archaeobotanical evidence for the use of pulses in prehistoric Greece based on two case studies from the north, and explores (a) their preparation for consumption, in particular their detoxification and (b) the consumption of pulses as a component of ordinary daily meals in prehistoric times, as well as those for special occasions, within a context of feasting. Valamoti S (2004) *Plants and people in Late Neolithic and Early Bronze Age northern Greece. An archaeobotanical investigation.* (BAR International Series 1258).