PLANT REMAINS FROM NEOLITHIC SITE OF KLEITOS, NORTHERN GREECE

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Introduction

The site of Kleitos is situated near the city of Kozani, in Northern Greece. Rescue excavations of the settlement were carried out during 2006 – 2010 by the Ephorate of Antiquities of Kozani, under the supervision of Ch. Ziota. Two Neolithic settlements were unearthed, Kleitos 1, dated to Late Neolithic and Kleitos 2, dated to Final Neolithic. Kleitos 2 is located 100 m. northeast of Kleitos 1. Successive floors, clay constructions and pits, inside and outside the houses, a number of small finds and burials were revealed. (Ziota et al. 2009, Ziota 2010) During the excavation of the settlement an attempt was made to collect soil samples from all the excavated units. The samples were collected from different contexts, like floors, structures, post-holes, hearths, pits, ovens, burnt layers. As a result more than 6000 samples were collected from the site and are in process. (Stylianakou & Valamoti, in press). The archaeobotanical data presented here have been preserved by carbonization, are dated to Late and Final Neolithic periods and correspond to various habitation phases.

Results and Discussion

Identification of plant remains revealed 27 plant species/genera/families, cultivated and wild. Cereals include emmer wheat (Triticum dicoccum), einkorn wheat (Triticum monococcum) and 'new type' glume wheat. The first two species are represented by grains and chaff (glume bases and spikelet forks) while 'new type' glume wheat is represented by glume bases and spikelet forks. It is possible that some of the emmer grain may correspond to new glume wheat and needs to be examined further. Barley (Hordeum vulgare) is also present in the samples represented by grain corresponding to both the 'naked' and 'hulled' varieties. A variety of pulses are present at the site among them, grass pea (Lathyrus sativus L. / L. cicera L.), lentils (Lens.Sp.) and bitter vetch (Vicia ervilia L.)). Fruits and nuts include blackberry (Rubus fruticosus L.), danewort (Sambucus ebulus L.) and Cornelian cherry (Cornus mas L.). Plant species of wild vegetation were also identified.

Most of the rich samples studied so far, derive from Kleitos 1. More specifically from open spaces of buildings A, B, Γ, Δ, H and I, the interior of constructions and pits, while some of them derived from the floor of building 3 in Kleitos 2. The most common finds according to the research so far are glume wheats. In some cases there were found as seeds, in others as chaff or mixed. Samples derived from the exterior of buildings B, Γ, Δ, H in Kleitos 1 are represented mostly by chaff of 'new type' glume wheat. Einkorn chaff is also present while emmer chaff is either absent from the samples or present in lower proportions. There is also an indication of cereal storage, represented by concentrations of emmer grain on the exterior of buildings A, I and in a construction, in Kleitos 1. On the floor of building 3, in Kleitos 2, fragments of several vessels were found, including, at least a large one used for storage. Some of the vessels found contained concentrations of eikorn and barley grains which were found scattered throughout the area of the floor. (Ziota 2010).

As regards pulse seeds, the richest bitter vetch concentration was found in an outside pit in Kleitos 1 while that of grass pea in building 3 of Kleitos 1. Seeds of lentil are sporadically encountered in several samples. Fruits and nuts such as blackberry, cornelian cherry and acorns are present in few samples only but in low numbers from different areas of Kleitos. Danewort was found in small concentration inside construction 1, in Kleitos 1. Wild/Weed species were also found but generally in low proportions.

The presence of chaff in the samples, as well as the wild/weed seeds could have derived from the by -products of dehusking glume wheat spikelets, alternatively they could have been incorporated in dung (as digested material) or dung cakes (as added material) used as fuel.

The plant remains retrieved from the archaeological deposits of Kleitos resulted from a range of human activities such as harvesting and processing their crops or storing them. Their diet was based on a variety of species which were either cultivated or collected from the wild.

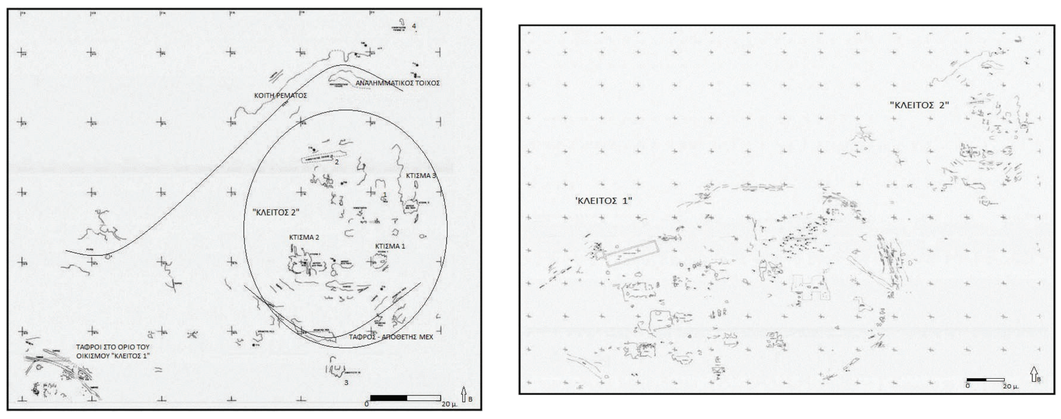
The limited presence of weed seeds could be an indicator of harvest methods (harvesting only the ears) or field preparation by thorough weeding. It is possible, as has been suggested for Makriyalos (Valamoti 2004) and Apsalos (Valamoti 2006), that people cultivated small plots of land, close to the settlements, spending time and effort to carefully prepare them. Possibly this is the case for Kleitos, too.

Possible Uses of Plants Identified at Neolithic Kleitos

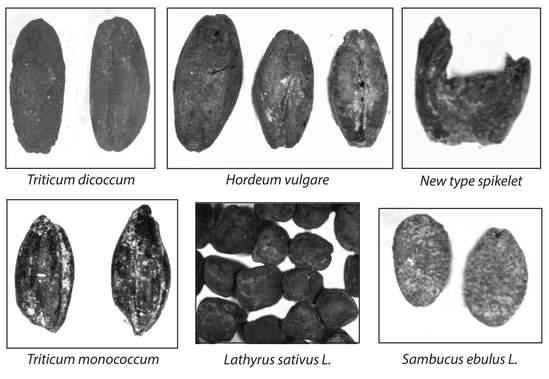
The precise use of plant remains identified in the archaeological record cannot be directly inferred, for example whether a crop was intended as food or fodder. Our evidence for dehusking would suggest that the glume wheats at the site were intended for human consumption though we cannot exclude the possibility that some of these crops, depending on the particular needs and the crop part, might have also been occasionally or more systematically fed to animals. Grass pea and bitter vetch seemed to play an important role in the diet of the inhabitants as these two types were found in higher concentration. Since these species are toxic, the processing of pulses before cooking, with the leaching of toxins by boiling and then the discharge of water, is an effective method for their consumption. The limited presence of fruits and nuts at Kleitos indicate that they were growing around the settlement and that the site's inhabitants and/or their animals had access to them.

Conclusions

In light of the archaeobotanical evidence from Kleitos, the site is similar to other settlements of northern Greece in terms of the crops cultivated, although the range of wild species used is rather limited compared to slightly later sites of the 5th millennium B.C. like Mandalo and Dikili Tash (Valamoti & Jones 2003, Valamoti S. M., 2004) . The continuation of the study of more samples collected at the site will certainly allow a better insight into Neolithic plant exploitation, dietary practices and agricultural economy at the site and the wider area of western Macedonia.

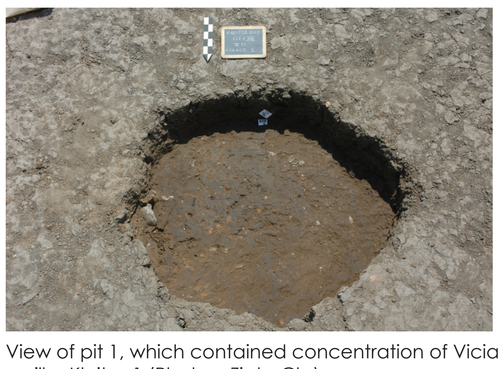


Kleitos 1 & 2: General view of the sites area on the top and topographic plans showing the excavated trenches on the bottom (photos: Ziota Ch.).



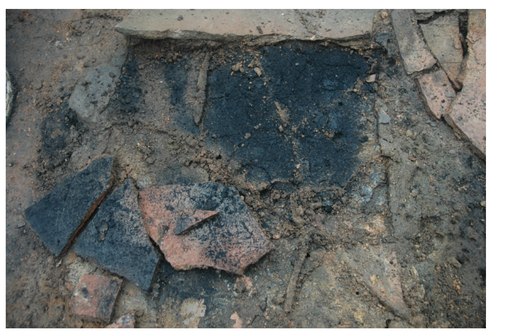
Seeds derived from the deposits of Kleitos

View of construction 1, which contained concentration of Sambucus ebulus. Kleitos 1 (Photo : Ziota Ch.)



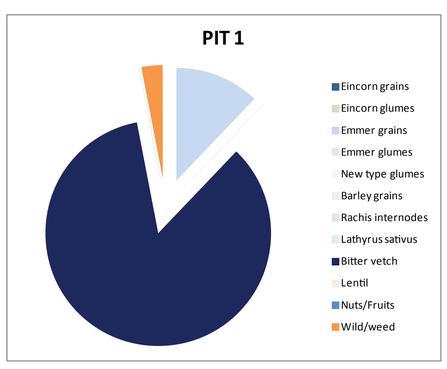
View of pit 1, which contained concentration of Vicia ervilla. Kleitos 1 (Photo : Ziota Ch.)

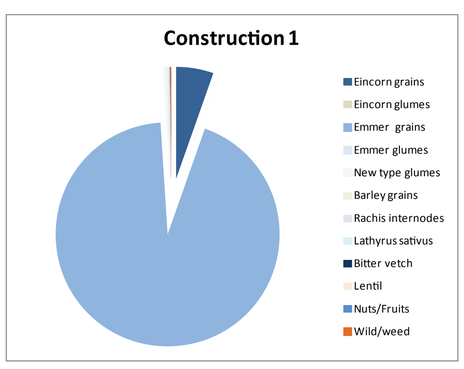
View of construction 1, which contained concentration of Triticum dicoccum. Kleitos 1 (Photo : Ziota Ch.)

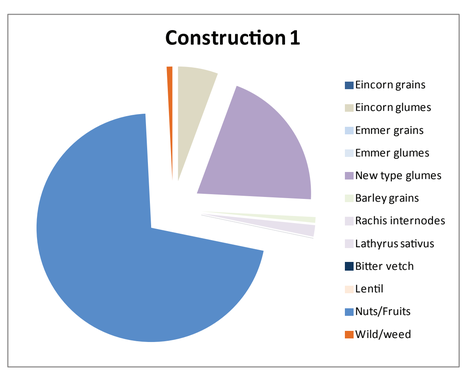


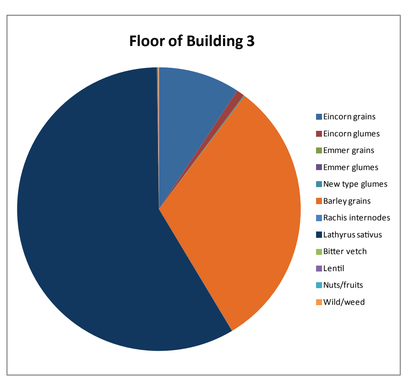
View of the floor in building 3, Kleitos 2 (Photo : Ziota Ch.)

View of the floor in building 3, Kleitos 2 (Photo : Ziota Ch.)









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