

Final report on the analysis of charred plant remains from the Late Neolithic and Bronze Age riverside site of Longas Elatis in western Macedonia, northern Greece.

INTRODUCTION

Over the last 25 years archaeobotanical sampling in western Macedonia and particularly in the region of Kozani has been intensive and systematic and the archaeobotanical material from several sites are under study or have been published (Kremasti Koiladas, Karathanou and Valamoti 2011, Karathanou et al. 2011, Kleitos, Stylianakou and Valamoti 2012, Phyllotsairi, Mavropigi, Valamoti 2011). This poster presents the final results of analysis of charred plant remains from the Late Neolithic and Bronze Age riverside settlement of Longas Elatis, adding significantly to the already known archaeobotanical material from investigated sites in western Macedonia.



Fig. 1 Map of Greece showing the site of Longas Elatis

SAMPLING AND PROCESSING METHODS

The samples were collected during the excavation seasons 2009-2012 from all excavated units such as floor fills, postholes, hearths, furnaces, stone-made structures, vessels (pots), burials, burnt or grey layers and the archaeobotanical remains were charred due to fire. Totally 1074 liters of soils were processed using a variant of the Ankara Machine (French 1971). Floated material was collected by a set of two sieves with an aperture of 1mm sieve and 300µ each and examined in the laboratory, using a stereomicroscope (X8-X16). The heavy residue was retained in the flotation machine by a 1mm mesh for study.

A total of 258 samples were collected and 107 produced seeds. Choice for samples was based on scanning and this procentage resulted in the selection of 17 samples for study.

FOOD HABITS AND PREFERENCES

The presence of seeds almost in all the samples shows that they constituted cultivated types that were used as foods. The main crops represented at the samples are the glume wheats, with einkorn by far the most common. Its increased presence inside or near clay- or stone-made structures and on the floor fills and combustion areas implies its storage and consumption from the inhabitants, particularly at the Early Bronze Age. This predominance of einkorn at the site strengthens the opinion that glume wheats, and mainly this type of wheat, continue dominating at the Early Bronze Age in storage spaces in settlements of northern Greece (Kroll 1983, Halstead 1994). It is considered that einkorn determined culturally the inhabitants of a wider region and constituted an indicator of social inequalities and social competition (Hamilakis 2000). On the other side, emmer with smaller presence was probably cultivated along with einkorn in different proportions. It cannot be excluded the possibility that the emmer represented a different cultural choice of the inhabitants of the settlement (Valamoti 2009). Another type of glume wheat that was recognized in the material is the spelt wheat. Its presence in the samples implies that the plant was cultivated, as it happens with emmer, but on a limited basis related to einkorn.

Barley is represented at the samples and it seems that it existed in the nutritional and economic choices of the people of the settlement. Additionally, barley is usually interpreted also as fodder. However, it could not be ascertained whether this was consumed only by the people in the settlement or even by the animals.

Pulses as a source of proteins supplemented the dietary range of cereals, occurring in samples. Grass pea and bitter vetch are the most commonly occurring. Although both legumes are toxic for humans and animals could be used as food or fodder.

Fruits as a source of vitamins were collected from the wider environment of the settlement and could have been browsed by animals or eaten fresh by humans. Some of these species could also have been cultivated. The fruit species include grapes, blackberry and cornelian cherry. Among fruits, grape pips are the most common find presented almost in all the samples along with the presence of a few pressed grapes. Although wine making cannot be proved, it remains an existing possibility.

The remains of wild plants are rather low. Only a few weeds were found. Their limited presence in the samples is not sufficient to rebuild the agricultural practices in the settlement. Only the presence of weeds *Bugglossoides arvensis* and *Lolium temulentum*, which are winter annuals could provide some information and refer to autumn sowing.

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REFERENCES

French, D.H., 1971. An experiment in water-sieving. *Anatolian Studies* 21, 59-64.
Halstead, P., 1994. The north-south divide: Regional paths to complexity in prehistoric Greece. In C. Mathers and S. Stoddart (eds.), *Development and Decline in the Mediterranean Bronze Age* (Sheffield Archaeological Monographs 8), 195-219. Sheffield, J. R. Collis Publications.
Hamilakis, Y., 2000. The anthropology of food and drink consumption and Aegean archaeology. In S. G. Vaughn and W. D. E. Coulson (eds.), *Paleodiet in the Aegean*, 55-63. Oxford: Oxbow books.
Karamitrou-Mentesidi, G. and Theodorou, D., 2009. Από την έρευνα στο φράγμα Ιλαρίωνα (Αλιδακίων): η ανασκαφή στο Λογκά Ελάτις, *ΑΕΜΘ* 23, 53-61.
Karamitrou-Mentesidi, G., 2009. Από την έρευνα στο φράγμα Ιλαρίωνα (Αλιδακίων) της ΔΕΗ Α.Ε., *ΑΔ* 64, 23-29.
Karamitrou-Mentesidi, G., 2010. Από το ανασκαφικό έργο της Α' ΕΠΚΑ κατά το 2010, *ΑΕΜΘ* 24, 39-52.
Karamitrou-Mentesidi, G., 2011. Από το ανασκαφικό έργο της Α' ΕΠΚΑ κατά το 2011, *ΑΕΜΘ* 25, 17-38.
Karamitrou-Mentesidi, G., 2011. Από την έρευνα στο φράγμα Ιλαρίωνα (Αλιδακίων) της ΔΕΗ Α.Ε., *ΑΔ* 66, 22-24.
Karathanou, A., Valamoti, S.M., 2011. Η αρχαιολογική έρευνα στη νεολιθική θέση Κρεμαστή Κοιλιάδας, *ΑΕΜΘ* 25, 2008, 57-70.
Kroll, H. J., 1983. *Kastanas: Ausgrabungen in einem Siedlungshagel der Bronze und Eisenzeit Makedoniens 1975-1979. Die Pflanzenfunde*. Prähistorische Archäologie in Südosteuropa, Band 2. Berlin: Wissenschaftsverlag Volker Spiess.
Stylianakou H., Valamoti, S.M., 2012. Αρχαιολογικά δεδομένα από τη νεολιθική θέση Κλειτός Κοζάνης, *ΑΕΜΘ* 26, υπό δημοσίευση.
Valamoti, S.M., 2009. Η Αρχαιολογική Έρευνα της Διατροφής στην Προϊστορική Ελλάδα (An Archaeobotanical Investigation of Prehistoric Diet in Greece, in Greek). Thessaloniki: University Studio Press.
Valamoti, S.M., Moniak, A., and Karathanou, A., 2011. An investigation of processing and consumption of pulses among prehistoric societies: archaeobotanical, experimental and ethnographic evidence from Greece. *Vegetation History and Archaeobotany* 20, 5, 381-396.
Valamoti, S.M., 2011. Σπάρτα για νεκρούς: Αρχαιολογικά δεδομένα από τη Μαυροπηγή Κοζάνης, θέση Φυλλοτσάρι. *Το Αρχαιολογικό Έργο στην Ανω Μακεδονία* 1, 2009, 245-256.

THE SITE UNDER STUDY

The site is located in the low right bank of Aliakmon, the longest river entirely within Greek borders (297km up to the point where it flows into the Thermaic Gulf, located immediately south of Thessaloniki regional unit) and particularly in the mild sloping terraces of adjacent hills, covering an area of 3000 m2 (fig. 1, 2). Additionally, it constituted a pole of attraction for people for permanent establishment from the Neolithic period and its use was not abandoned over time while ensured fertile and easily cultivable ground (Karamitrou-Mentesidi 2009, 2011). In the valleys and plains of the Aliakmon a number of important settlements, such as Longas, grew up as long ago as prehistoric times and went on to develop into important cities of the historical era (Karamitrou-Mentesidi and Theodorou 2009, Karamitrou-Mentesidi 2010). Rescue excavations by the 30th Ephorate of Prehistoric and Classical Antiquities carried out from 2006 until 2012 have discovered deposits dating between the Late Neolithic and the Hellenistic period (fig. 3).



Fig. 2 Geomorphological map of Longas Elatis



Fig.5 Einkorn



Fig.6 Barley



Fig.7 Grass pea



Fig.8 Bitter vetch



Fig.9 Lentil



Fig.10 Grape pips

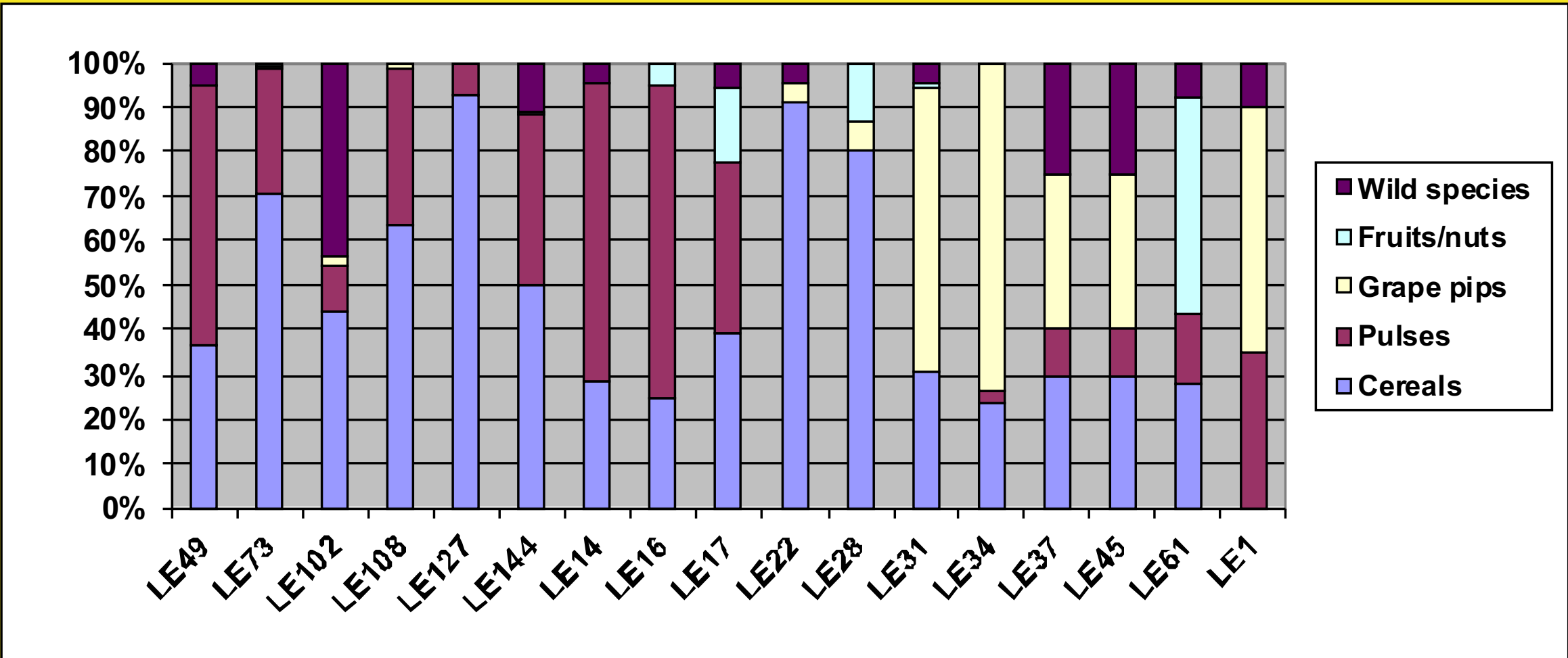


Fig.11 Chart showing the proportions of cereals, pulses, grape pips, fruits/nuts and wild species in the samples analyzed

CONCLUSION

The charred plant remains from Longas Elatis provide information focusing not only on diet and subsistence as mentioned above, but also the patterning of several activities. Particularly, they mostly derived from fragmentary floor fills, structures and combustion areas associated with food preparation and storage activities and generally to activities associated with the consumption of food.

The analysis allowed to assess differences in indoor and outdoor activities, with the potential of identifying patterns of spatial organization in the processing and storage of crops and the preparation of food. Probably the crop cleaning practices were placed outside the houses. In all of the samples chaff and wild plants were rarely found. It could be said that the food processing was placed inside the houses, as well as the storage of the crops.

Additionally, these archaeobotanical data contribute to the enrichment of data available for the Neolithic and Bronze Age in western Macedonia and generally in northern Greece and confirm the picture that has already been formed by the archaeobotanical material from a small number of sites in the region of Kozani. In general, they contributed to our knowledge about the various aspects of human activity in relation to plants, giving valuable information about the aspects of the socioeconomic sphere of everyday life, such as use of space, storage of plants and food habits in Late Neolithic and Bronze Age western Macedonia.

Dimitra Kotsachristou^{1,2}
¹Ephorate of Antiquities of Kozani, General Secretariat of Culture, Greece
²Archaeological museum of Aiani, Kozani, Greece
e-mail: dkotsach1982@gmail.com



Fig. 3 The site of Longas Elatis, the excavation area

THE ARCHAEOBOTANICAL ANALYSIS

The samples originate from trenches Z13 (samples: LE14, LE16, LE17, LE22, LE28, LE31, LE34, LE45, LE61) dated to Late Neolithic, Z14 (samples: LE49, LE73, LE108), ΣΤ10 (samples: LE127, LE144), ΣΤ11 (sample: LE102) and ΣΤ13 (samples: LE37, LE1) (Sector A) dated to Early Bronze Age, including houses, floor fills (LE34, LE73, LE108), stone-made structures (LE45, LE144, LE1), hearths (LE31, LE37), vessels (pots) (LE16, LE17), ditches (LE22, LE28), combustion areas (LE14, LE61, LE127) and burnt (LE49) or grey layers (LE102) (fig. 4).

The Longas Elatis plant assemblage represents a remarkable diversity of several crop, fruit/nut and wild species. Especially, the species that were identified in samples consist of:

Cereals: einkorn (*Triticum monococcum*) (fig. 5), emmer (*Triticum dicoccum*), spelt (*Triticum spelta*), bread/macaroni wheat (*Triticum aestivum/durum*), barley (*Hordeum vulgare*) (fig. 6), oat (*Avena sativa*) and millet (*Panicum miliaceum*).

Pulses: grass pea (*Lathyrus sativus*) (fig. 7), bitter vetch (*Vicia ervilia*) (fig. 8), lentil (*Lens* sp.) (fig. 9), common pea (*Pisum sativum*) and common vetch (*Vicia sativa*)

Fruits/nuts: grape (*Vitis vinifera*) (fig. 10), blackberry (*Rubus fruticosus*), cornelian cherry (*Cornus mas*), fig (*Ficus carica*), terebinth nut (*Pistacia terebinthus*) and elderberry (*Sambucus* sp.).

Wild species: *Chenopodium* spp., *Galium* spp., *Lolium temulentum*, *Buglossoides arvensis*, gramineae and polygonaceae.

According to the analyzed samples (fig. 11), cereals (mainly einkorn, emmer and spelt) and legumes (bitter vetch, grass pea and lentil) are mostly preferred, as well as fruits in which emphasis is put on grapes. Generally, cereals are predominating over legumes, in particular einkorn which seemed to have a significant role in the inhabitant's diet. Along pulses, grass pea dominates in the samples and immediately bitter vetch follows in lower quantities. The number of finds of wild plants is rather low.

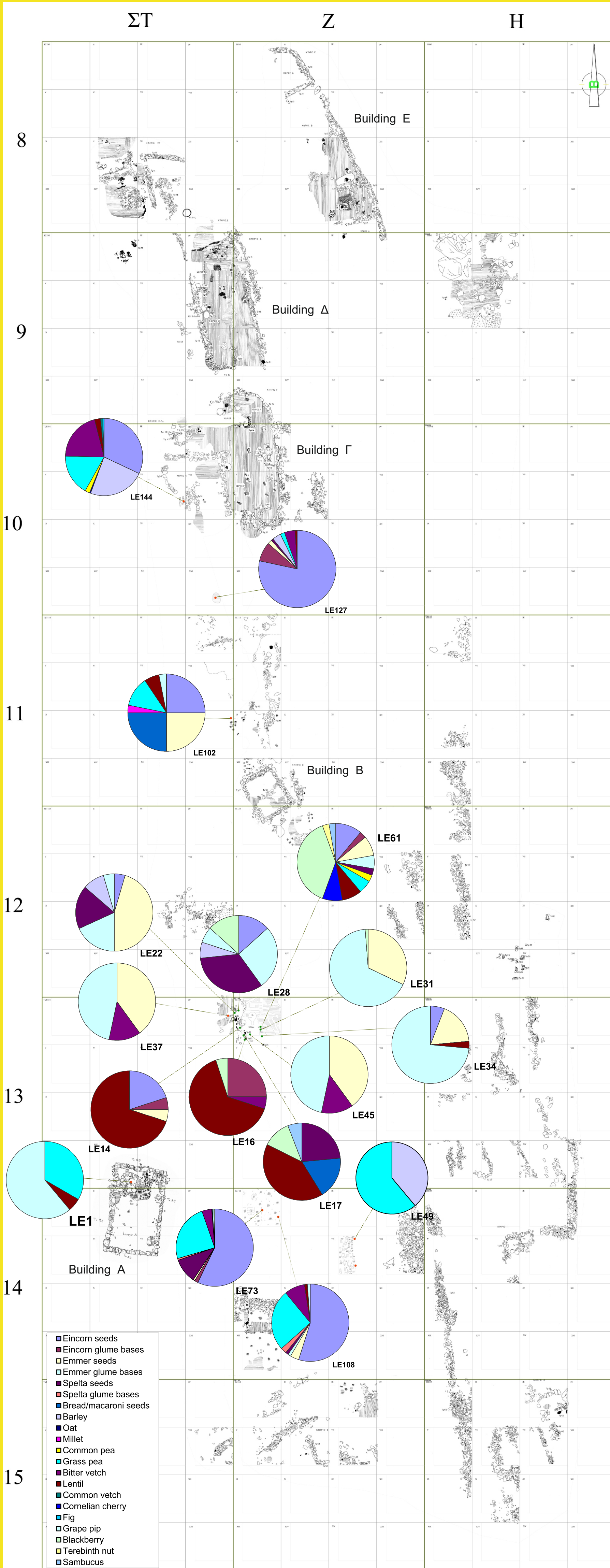


Fig. 4 Plan of the site showing location and crop/fruit/nut composition of samples