CEREALS FOR THE CARPETANIANS : ARCHAEOBOTANICAL RESEARCH IN EL LLANO DE LA HORCA (SANTORCAZ, MADRID, CENTRAL SPAIN), A LATE IRON AGE OPPIDUM

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INTRODUCCION

El Llano de la Horca is an important *oppidum* located at the eastern part of Madrid (central Spain) 40 Km. far from eponymus capital. This site is on the top of a plate hill (at 900 m. above sea level) offering a strategic defensive location *circa* 10 Ha. High moorlands and plateaux with abrupt sloppes and corniches, plains, platforms and bottom of valleys are the main trends of the landscape (Image on the left). Vegetal landscape is open and degradated with some disseminated *Juniperus thurifera, Quercus ilex, Q. faginea* and *Pinus pinaster* clumps, each one associated with their own shrubs cortege.

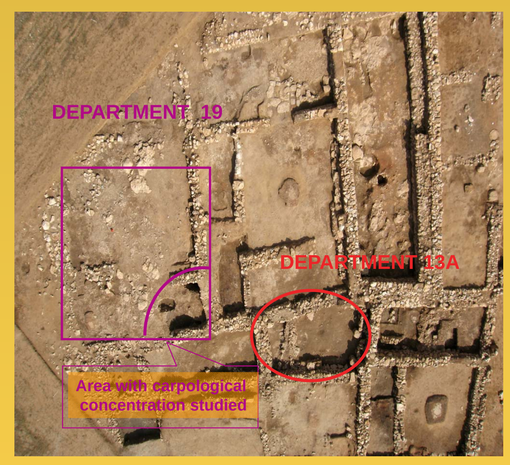
This settlement was occupied by Carpetanians, the prerroman people who were living in Central Spain between the end of the third century and early decades of first century BC. Urban planning is a complex one with rectilinear streets and blocks of rectangular houses. Extended dig is nowadays concentrated in a huge area with 1500 m^2 (Sector I) placed at the northwestern part of the *oppidum*, where several houses have been excavated. The scheme of this houses is a tripartite structure: first an entrance or a hall, then the main room with a central hearth and a lateral working area and, finally, the back room with storage and other possible functions as sleeping and services zone.

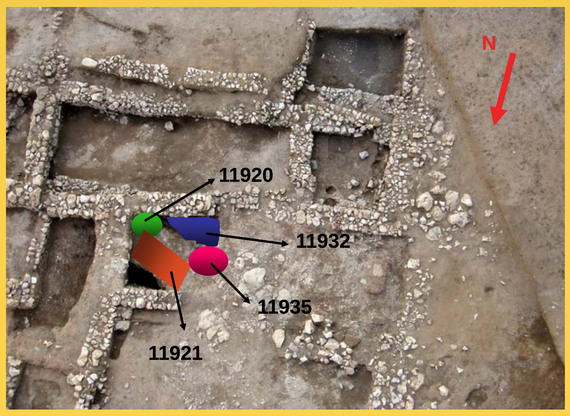
Diggings of Departments 19 and 13-A (Image on the right), one house and one back room of another house, both located by the NW part of Sector I, have provided abundant charred vegetal remains disseminated along their respective surface excavation area.

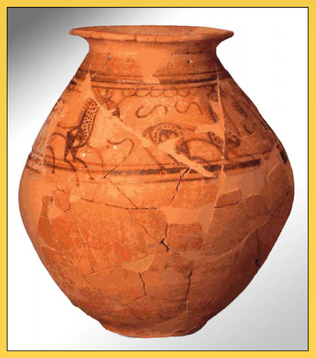
Two big archaeological layers have provided charcoal and seeds remains in Department 13-A: 11331 and 11346 (Image on the right down). This place could be a cereal storage area whose top roof and walls were fallen in a certain moment. After this collapse they levelled the floor with all what was storaged and fallen (11331). 11346 is a clayey level related with this mentioned levelling process. Although Department 19 has not been entirely excavated, it's back room seems to be a storage area too (Image on the left down). Stratigraphic units 11920, 11932 and 11935 are pit fillings and 11921 is a deposit cut by the pits.

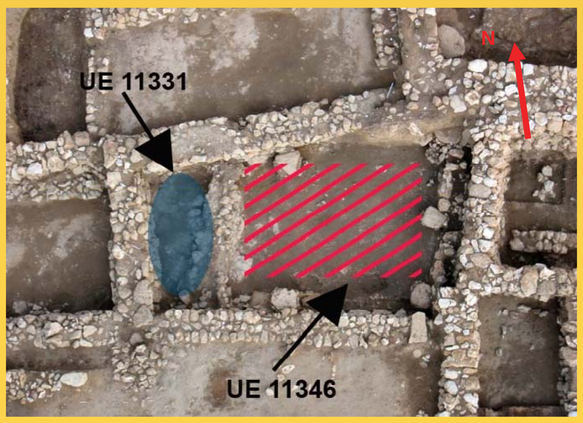
AIM OF THIS WORK

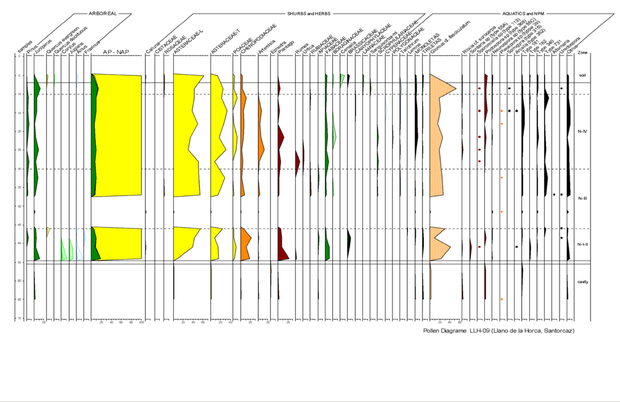
First integrated Archaeobotanical studies of this settlement are presented here. Pollen analysis come from a general profile with several occupation phases as diagram on the left indicates. While anthracological and carpological analysis come from the sediments excavated and processed in both places mentioned above.











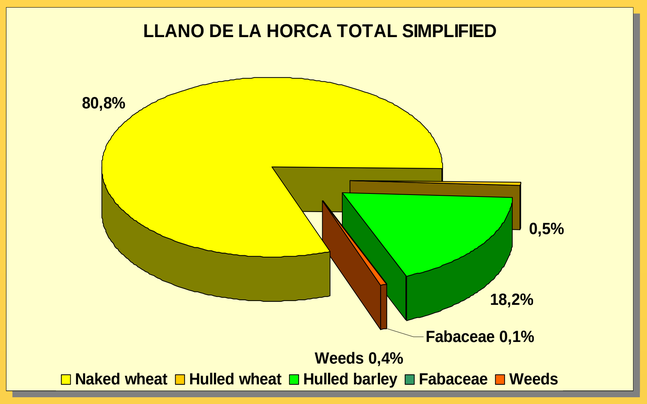
Pollen Diagrame LLH-09 (Llano de la Horca, Santorcaz)

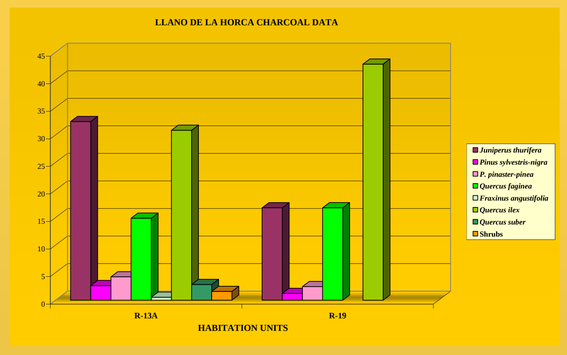
Two very relevant archaeological pieces found in two diferent rooms of Sector I : a bronze plate decorated with animals and geometric motives (left) and a pottery vessel decorated with horses (right)

VEGETAL ENVIRONMENT AND THE EXPLOITATION OF THE LANDSCAPE

Vegetation reconstruction derived from pollen analysis show an open landscape resulting mainly of deforestation processes as indicated by *Glomus* continuous amounts. *Pinus, Juniperus,* Asteraceae, Chenopodiaceae, Poaceae and some *Quercus* (evergreen type) occurrences define the instalation of dry mediterranean climatic conditions. Nevertheless the I-II human occupation phases were developed under higher water resources availability as noticed by river banks vegetation formations where *Corylus* and *Juglans* could have developed. Aquatics plants could be related both to the presence of temporary swamps soils and also to its use for the manufacture of some artifacts as baskets.

Anthropic signal always overlaps climatic one as indicated by developement of nitrophilous taxa : Asteraceae, Boraginaceae, *Rumex, Artemisia,* Urtica, Plantago, Rubiaceae, Chenopodiaceae, as well as by Fabaceae, Brassicaceae, Apiaceae, that definine a different use of the landscape carried out by Carpetanians. A serie of phases in the land use can be observed : Zone I-II livestock activities are dominant; phase III are characterised by the exploitation of small cultivated fields; lastly in phase IV livestock activities took place again.





WOODLAND EXPLOITATION

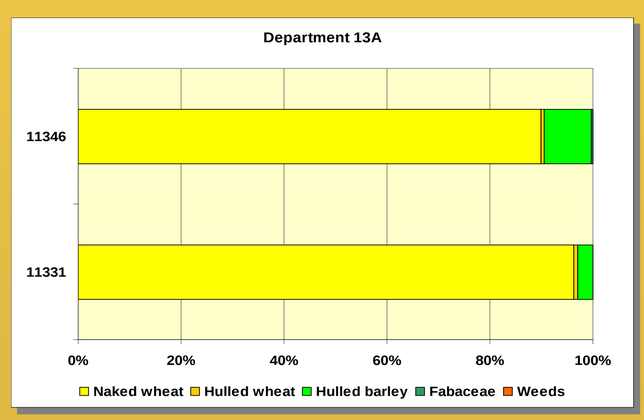
Correlations between charcoal and pollen analyses confirms an open landscape dominated by *Juniperus*, the low amounts of pines (*Pinus sylvestris-nigra, P. pinaster-pinea)* as well as the presence of other vegetation communities indicating the management and exploitation of different woodland formations. Presence of *Quercus suber* is also noticeable.

Charcoal study from department 13 A partiallly reveal the presence of charpenter wood related to the mentionned collapse event. *Quercus ilex* and *Q. faginea* have been employed as beams while *Pinus pinaster-pinea, Pinus* sp. have been employed as stakes, according to some charcoal identifications coming from other deparments excavated.

Fragmentation of samples and the taxonomical variability of charcoal suggest nevertheless a mixture of wood categories (charpenter and woodfire) occurred at the moment of leveling of the ground, made with all re-used materials.

EL LLANO DE LA HORCA (SANTORCAZ, MADRID, CENTRAL SPAIN)

DEPARTMENTS HOUSES	R-13A		R-19			
STRATIGRAPHIC UNITS	US 11331	US 11346	US 11920	US 11921	US 11932	US 11935
TAXA	N	N	N	N	N	N
Triticum aestivum/compactum	202	197	78	129		
Triticum aestivum/durum(t. compactoide)	148	102	70	84	2	
Triticum aestivum/durum	162	155	98	115	3	
Triticum dicoccum	2					
Triticum dicoccum-monococcum	1	1				
Triticum monococcum	1	1	1	2		
Triticum sp.(naked)	1					
Triticum sp.	2					
Triticum/Hordeum				1		
*Hordeum vulgare*ssp. *distichum*	11	23	50	142	25	3
*Hordeum vulgare*ssp. *distichum* (embibed/germinated)		1		7		
*Hordeum vulgare*ssp. *vulgare*	5	2	9	25	5	
Hordeum sp.	1					
Fabaceae (small Legume)		1				
Polygonaceae					1	
Chenopodium album					6	
TOTAL	536	483	306	513	42	3



PLANT SEEDS

The general analysis of plant macroremains have revealed the predominance of naked wheat with hulled barley minor amounts. Hulled wheat is also noticeable besides no relevant presences of Fabaceae and Weeds remains. Caryopses from R-13 A area show a better conservation degree in relation to those from R-19 area.

The cereal storage structure was probably made in perishable material (no pottery fragments associated have been found).

The carpological analysis in each UUSS show a different distribution of barley remains, specially in R-19 contexts.

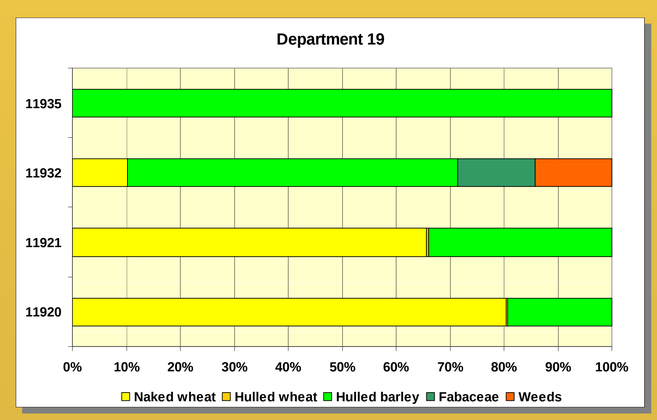
The study of chemical residues in pottery containers, from an other excavation area of the same *oppidum*, have revealed the use of beverages derived from cereals fermentation (brewing?) probably confirmed also by imbibed and germinated caryopses.

CONCLUSIONS

The integrated archaeobotanical analysis in El Llano de la Horca site, shed new light on Carpetanian landscape use and the relationship with natural environment. In particular an articulated exploitation of natural resources was highlighted by pollen and charcoal analyses, related to woodland and cereals fields.

The seeds remains, retrieved in the different archaeological contexts, show a large use of naked wheat and barley probably as flour and beverage, according to chemical analysis of residues.

The results draw a picture of a subsistence based in cereal agriculture and crop processing activities, with evidences of deforestation in order to gain space for crop fields attending the necessities of a growing community probably in the order of many hundreds inhabitants.



Triticum aestivum/durum 10x R-13 A US 11331 (left) *Hordeum vulgare* 10x R-19 US 11921 (right)

15th Conference of the International Work Group for Palaeoethnobotany in Wilhelmshaven, Germany, May 31 - June 5, 2010