New data on naked wheat in the early Neolithic lakeshore site of La Draga (Banyoles, Spain). Identification issues and crop processing techniques

Ferran Antolín1, Stefanie Jacomet1, Amy Bogaard2, Ramon Buxó3
1Basel University, Dept. of Environmental Sciences, Integrative Prehistory and Archaeological Science (IPNA / IPAS) ferran.antolin@unibas.ch; stefanie.jacomet@unibas.ch
2School of Archaeology, 36 Beaumont Street, Oxford OX1 2PG, United Kingdom, amy.bogaard@arch.ox.ac.uk
3Museu d’Arqueologia de Catalunya, rboxu@gencat.cat

Location: Banyoles, Catalonia
Altitude: 172 m a.s.l.

The site
La Draga is the only lakeshore site that is known in the Iberian Peninsula. It is dated to around 5350-5000 cal BC (c. 1000 years earlier than the first lakeshore sites from north of the Alpine chain) and at least two phases of Cardial Ware occupation have been identified. Waterlogged preservation only affects the earlier occupation phase (5350-5200 cal BC). This presentation focuses on the results of this settlement phase (sector D (East)).

The sampling strategy
Fully quantitative analysis is time-consuming and can only be carried out on small samples. For this reason, multiple sampling strategy was designed:
• samples of 1 l were taken per subsquare (50x50 cm)
• samples of 7-10 l were taken per square (1x1 m)
• 3 profile samples were obtained along the southern profile
• large bulk samples were water-sieved for semi-quantitative evaluation
This strategy provides fully quantitative data with a high spatial resolution as well as presence/absence data for large items represented in large bulk samples (ear fragments, capsule fragments, hazelnuts, acorns...).

Crops and taphonomy
Several crops were identified:
- Cereals: Hordeum distichum, Triticum aestivum type, Triticum durum/turgidum type, Triticum dicoccum, Triticum monococcum and, most probably, the so-called “new” glume wheat. Poppy (Papaver somniferum).
- Cereals were majorly preserved in charred state, while poppy was mostly recovered in waterlogged state.

Identification of naked wheat chaff remains
Triticum durum/turgidum type

Problematic in-between forms

Triticum cf. aestivum type

Naked wheat: new data
Naked wheat was the best represented crop. The average concentration value for the charred grains in layer Vila was over 260 n/l (89.5% of ubiquity). The larger concentrations were found on the western side (probably an in situ burnt store).
Fragments of grain (including undifferentiated cereal) produced prior to charring were 4.5% of the total grain remains of square JGB0 and 3.3% of JHB0.
Charred chaff remains of naked wheat were also abundant. The largest concentrations of chaff (c. 130-550 n/l) were found in squares JGB0 and JHB0. An ear fragment of Triticum durum/turgidum type was recovered in the bulk sample of square J80.

<table>
<thead>
<tr>
<th>Chaff (system, surface samples)</th>
<th>Layer Vila (below)</th>
<th>Layer Vila (above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naked wheat</td>
<td>55</td>
<td>28</td>
</tr>
<tr>
<td>4n naked wheat</td>
<td>44</td>
<td>26</td>
</tr>
<tr>
<td>6n naked wheat</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Naked wheat was probably the most important crop at the site, since our results corroborate earlier investigations (Buxó et al. 2000; Antolín and Buxó, 2011a). The store of sector D is very interesting, given that some of the samples present a large proportion of chaff. The proportion of chaff is even higher that what should be expected for a storage in ear form. Besides, the significant presence of fragments of grain produced prior to charring indicates that the crop had been threshed. Consequently, it is possible that the crop was not winnowed or that chaff was used as isolation material in order to favour its long-term storage.

Conclusions
Most of the naked wheat chaff recovered at La Draga seems to be of tetraploid type. This seems to be a common feature with La Marmotta site (Lake Bracciano, Italy), the other lakeshore site known for this period in the Western Mediterranean. Some possible hexaploid rachis fragments were identified, but no clear and characteristic examples of this taxon were observed.
A large number of chaff remains were recovered in sector D (east) of La Draga. It was concluded that this is due to the fact that a store was located in the western part of this area and that, even though the crop had been threshed, for some reason the chaff was left together with the grain. Such results were not observed in previous works, for which further analyses are needed in order to interpret this find as a unique assemblage or as a crop storage technique practiced at the site.