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Réflexions sur la nature et l’origine des bois utilisés dans la crémation gallo-romaine, en Languedoc (Sud de la France)

Isabel Figueiral, Laurent Fabre and Valérie Bel
CONSIDERATIONS ON THE NATURE AND ORIGIN OF WOOD-FUEL FROM GALLO-ROMAN CREMATIONS, IN THE LANGUEDOC REGION (SOUTHERN FRANCE)

Isabel FIGUEIRAL 1,2, Laurent FABRE 1,2 & Valérie BEL 1,3

ABSTRACT

A surprising variety of woods has been identified while studying wood-fuel from gallo-roman cremations, in the Languedoc region. A minimum of 34 species, both shrubby and arboreal, is recorded. The recycling of pruning remains is particularly noticed. No significant differences between rural and urban cremation burials are observed. The diversified taxonomic spectrum suggests that, in general, no particular selection was carried out. As a result data thus obtained may also provide information on local vegetation, local ecology and plant biogeography. It is possible however, that in certain occasions, particular species might have been selected for symbolic reasons. Results obtained point to the existence of a coherent supply system, without a standard procedure and without precise and / or restrictive rules.

Keys-words: wood, cremation, supply, Languedoc, Gallo-Roman.

RÉSUMÉ

RÉflexions sur la nature et l’origine des bois utilisés dans la crémation gallo-romaine, en Languedoc (Sud de la France)

En Languedoc, l’analyse anthracologique des combustibles utilisés pour les crémations gallo-romaines montre une remarquable variété spécifique des bois mis au feu. Un minimum de 34 espèces, provenant d’arbustes et d’arbres, est enregistré. Cette étude révèle aussi l’utilisation comme combustible de déchets de taille d’arbres cultivés. Toutefois, on ne note pas de différences significatives entre les nécropoles à incinérations de contexte rural et celles de contexte urbain. Le large spectre taxonomique identifié suggère qu’il n’existe pas de sélection particulière. Ainsi l’information apportée par ces résultats sur la végétation locale peut être traduite en termes d’écologie et de biogéographie. Il est cependant possible que certaines espèces rares aient été sélectionnées pour des raisons d’ordre symbolique. Les résultats obtenus montrent l’existence d’un circuit d’alimentation en combustibles cohérent, sans qu’un procédé standard ou bien que des règles précises et/ou restrictives n’aient été reconnus.


1 - INTRODUCTION

At the height of the Roman Empire, cremation was the predominant burial practice in southern Gaul. This practice, which appeared during the Neolithic, spreads from the Late Bronze Age on, becoming exclusive, in the Languedoc region, during the Iron Age (Dedet, 2004). By the end of the 1st century and during the 2nd century A.D., cremation coexists with inhumation, until its disappearance during the beginning of the 3rd century A.D.

The roman burial ensembles comprise pyres in pits (or graves) and different secondary structures yielding deposits of charred residues. This situation is in some ways analogous to former periods, but with the important exception that the number of uncovered pyres is much greater and the amount of charred plant material preserved much more significant.

Surprisingly, very few studies have been carried out so far concerning the use of wood, as fuel (lignum) and as building material (materia), and its management for the pyres. The reasons why little work has been done on this subject are simple. On one hand, wood identification can be labour-intensive and therefore expensive; on the other hand it has been often assumed that the collection of funerary wood fuel followed repetitive patterns and was therefore of limited interest. Investigations focussed instead on funerary offerings and ritual (Marinval, 1993; 2004; Bouby & Marinval, 2004; Pradat, 1994; Preiss et al., 2005, among others).

However, the first charcoal analyses effectuated (Heinz, 2002; Fabre et al., 2003) clearly showed that the reality was quite different. This is why it is relevant to approach this subject in a critical way, trying to record as much data as possible and to organise information and ideas. Several questions arise: (1) was wood subject to a specific selection? (2) how was the supply organised? (3) where was fuel wood collected? (4) are there any differences between rural and urban...
burial sites? Furthermore, the roman funeral followed strict rules, as described by several authors (Scheid, 1984, 2005, among others). However, no information has ever been provided about how the pyre was assembled or in what way the physical characteristics of different wood species influenced the structure and functioning of the pyre.

Our study will try to answer these questions and to provide a new insight into the way in which people dealt with death. Hopefully, this will help us gain a more complete picture of the gallo-roman society.

2 - SITES STUDIED

Recent archaeological excavations effected by INRAP (Institut National de Recherches Archéologiques Préventives) in the Hérault valley and in the Vistre plain (Languedoc, southern France) (fig. 1), prior to new urban developments and motorway construction, allowed us to study and compare several burial ensembles (Bel, 2007; Bel et al., 2005) located in rural (Aspiran-Soumaltre, Nîmes-Mas des Abeilles 2 et Mas de Vignoles 9) and urban contexts (Clermont-L’Hérault-Peyre Plantade, Nîmes-78 av. Jean Jaurès). Work carried out is part of two large research projects under de direction of J.-Y. Breuil (PCR « Espace rural et occupation du sol de la région nîmoise ») and H. Pomarèdes [ACR « Organisations, espaces et peuplements en Lodévois (vallée de l’Hérault, 34) durant l’Antiquité et le Moyen Âge »].

The burial ensemble discovered at Soumaltre comprises 30 tombs located close to an inn-farm, in the way linking Lodève to Saint-Thiébry and to the Via Domitia (Bel et al., 2004). Mas de Vignoles 9 and Mas des Abeilles also include small groups of tombs beside roads in the hinterland of Nîmes. A single pyre has been uncovered at Peyre Plantade, while 43 tombs form the enclosed group of 78, av. Jean Jaurès, located in the south-east exit of Nîmes.

Associated artefacts include pottery and glass vases (to serve food and drinks), perfume recipients, lamps, and (to a lesser extent) personal items of the deceased, as shoe nails and toiletries. These deposits are usually quite modest, with the exception of the pyre from Peyre Plantade which contained remains of a bed (frame elements of three iron legs in association with decorated bone elements)

The chronology of the structures studied is as follows:
- 1st century A.D.: Soulaltrre and Peyre-Plantade
- end 1st / 2nd centuries A.D.: 78, Jean Jaurès, Mas de Vignoles 9 and Mas des Abeilles 2.

The study of some of these sites is still under way and as a result, data presented here are still preliminary. We hope however that they might help recognize new avenues of research.

3 - MATERIAL AND METHODS

Charcoal fragments studied in the 5 sites were found concentrated in the different graves and recovered by wet sieving (mesh 4 and 2 mm):

urban contexts:
- Jean Jaurès (I – II AD: Graves 1320-1, 1320-2, 1351, 1004, 1055, 1295, 1296.
- Peyre Plantade (I AD): Grave 3060.

rural contexts:
- Soulaltrre (I – II AD): Graves 11172, 11190, 11104, 11090, 11034, 11040, 11194.
- Mas des Abeilles (I – II AD): Graves 1598, 1304.
- Mas de Vignolles 9 (II AD): Graves 2247, 2249.

In the laboratory, wood anatomical characters (preserved by charring) were observed under a compound microscope, equipped with reflected light. Identiﬁcations are achieved via the comparison of the archaeological material with modern reference material and the descriptions provided by specialized literature (Greguss, 1955, 1957; Grosser, 1977; Schweingruber, 1990).

4 - RESULTS AND COMMENTS

The evidence acquired so far (tab. 1 et 2) testiﬁes to the use of a wide range of woody plants, with a minimum of 34 species for 6680 charcoal fragments analysed.

The taxonomic spectrum identiﬁed includes plants characterizing diverse biotopes (1) Mediterranean mixed oak forest, (2) riparian woodland, (3) cultivated ﬁelds, (4) wasteland vegetation (5) highland forest, thus suggesting that different areas were exploited as sources of fuel wood for burial practices.

Comparison of information obtained appears to point to the absence of signiﬁcant differences between rural (29 taxa for 4131 fragments) and urban (22 taxa for 2549 fragments) cremation burials.
The use of both shrubby and arboreal species is recorded. Small calibre wood is easily obtained from the first, while the second provides both small and large calibre material.

Oaks (both deciduous and evergreen) are very ubiquitous and abundant elements, but they are not always predominant as might have been expected. These key species of the local Mediterranean vegetation were easily available in the areas exploited for firewood. Unexpected species can dominate in certain structures. Grave 1798, from Mas des Abeilles, is a good example of this: Rosaceae cf. *Crataegus* is the predominant fuel wood used (48.5%). At Jean Jaurès, *Buxus* is the main component of pyre 1004 (51.5%), while at Vignolles 9, *Vitis* dominates in US 2247 (61%).

Other unlikely species were also abundantly used, such as *Erica* (9.6% in *Ustrinum* 11104, 12.3% in grave 1164 from Soumaltrè (Fabre, 2004), and 42.2% in grave 1055 from Jean Jaurès), *Vitis* (20.1% in grave 1798 from Mas des Abeilles) and *Olea* (42% in grave 1055 from Jean Jaurès).

The taxonomic diversity observed suggests that, generally, no particular selection was carried out. Any wood coming to hand would be used in the cremation pyres. Availability and vicinity appear to have been the most important factors.

It is possible however, that in certain occasions, particular species might have been selected for symbolic reasons. This is for instance the case of *Cistus ladanifer* (Jean Jaurès), *Cupressus* (Soumaltrè) and *Pinus pinea* (Jean Jaurès). We recall that *Cistus ladanifer* is an aromatic and sticky shrub with specific habitat requirements and restricted to very few localities in the region (none of which in the vicinity of Nîmes). The leaves of this plant yield a fragrant resin, known as *labdanum*, used as an herbal medicine and in perfumes since Antiquity. Its use has been described by Greek and Roman authors, such as Herodotus, Dioscorides and Pliny the Elder (Deforce, 2006).

*Cupressus* (fig. 2) is an introduced ornamental tree, usually associated with graveyards and considered by many as “the” mortuary symbol, connected with death and the underworld. According to Connors (1992), Virgil clearly mentions the presence of this tree in funerary contexts, while Pliny the Elder notices that a branch of cypress was hung up in houses as a sign that someone had died. In the case of Soumaltrè, this is the earliest identification of *Cupressus* in the Languedoc region,

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**Tab. 1: Presence / absence of taxa in urban contexts (dominant taxon in black).**

Tab 1 : Présence / absence des taxons dans les contextes périurbains (taxon dominant en noir).
both as charcoal (Fabre, 2004) and seeds (Zwierzinski & Ruas, 2004). *Pinus pinea* is also a symbolic/magical plant, which assured the link between the living and the dead, associated with Cybele (tree) and Dionysos/Bacchus (female cones) (Bilimoff 2003, 2006; Ducourtial, 2002).

Attention must also be drawn to the problem of distinguishing wood fuel from funerary artefacts, such as beds, boxes, statuettes, which may have been made out of very particular species. The presence of mountain species such as *Fagus*, *Picea*/*Larix* could eventually be explained, even if the abundance of *Fagus* in some burials points to its use as fuel (60.4 %, pyre 1295, Jean Jaurès); in this case the supply of specific fuel wood may have answered a particular demand (from an upper-class individual, for example).

The taxonomic variety and the range of diameters used may reflect the existence of a flexible and opportunistic organisation of the supply, using all the available resources from different environments, even recycling pruning remains, such as those of *Vitis* (fig. 3), *Juglans* and *Olea*. As a result, the potential of this material for providing information on the composition of local vegetal environments must be taken into account. On the whole, the results obtained in the different ensembles are very similar to those resulting from the study of domestic charcoal from settlements (for references see Chabal 1997; Fabre 2004), identifying the same plant species and vegetation communities. These studies show that, during this period, wood collection was mainly carried out in areas dominated by *Quercus ilex* in association with colonizing species such as *Buxus* and *Erica*, which spread in detriment of deciduous oaks. The evergreen oak woodland, identified in the Languedoc since the gallo-roman period is a well prized biotope, exploited as a reliable source of firewood, as shown by the different charcoal analysis studies from the Hérault Valley and the area around Nîmes (Chabal, 1997; Fabre 2004, 2005). More mesophilous habitats were also exploited.

The abundant use of species providing branches and twigs of small calibre (ex: *Erica, Buxus*) and even monocotyledonous may also answer specific requirements of

<table>
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<tr>
<th>Rural contexts</th>
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<th>M. Abeilles</th>
<th>Vignoles 9</th>
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<td>1 AD</td>
<td>1 - 3 AD</td>
<td>II AD</td>
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<td>Acer pseudoplatanus</td>
<td>11172</td>
<td>11190</td>
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<td>Citrus spp.</td>
<td>11199</td>
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<td>Cucumis sativus</td>
<td>11154</td>
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<td>Eucalyptus sp.</td>
<td>1960</td>
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<td>Juniperus sp.</td>
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<td>Monocotyledonous</td>
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<td>Pterocarya fimbriata</td>
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<td>Rhamnus / Phalera</td>
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<td>Rosaceae type Cruceae</td>
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<td>Rosaceae type Prunus spinosa</td>
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<td>Vitus vinifera</td>
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<tr>
<td>Viburnum sp.</td>
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Tab. 2: Presence / absence of taxa in rural contexts (dominant taxon in black).
Tab 2 : Présence / absence des taxons dans les contextes ruraux (taxon dominant en noir).
Fig. 2: The first record of *Cupressus* in the Languedoc comes from Soumaltrè (transverse section on the left, tangential section on the right).

Fig. 2: *Cupressus* a été identifié pour la première fois, dans le Languedoc, sur le site de Soumaltrè (section transversale sur la gauche, section tangentielle sur la droite).

Fig. 3: *Vitis vinifera* appears to have been frequently used as fuel wood (Mas de Vignoles 9).

Fig. 3: *Vitus vinifera* a été fréquemment utilisée dans les crémations (Mas de Vignoles 9).
the combustion process, multiplying the number of ignition points when starting the cremation fire. We recall that, the speed and effectiveness of the cremation depends on the structure of the pyre, the amount of firewood used, the position of the body and the weather (for references see Dutour et al., 1989 and Blaizot, 2005). As observed when the pyre remains are not rearranged (or relocated), the majority of bone remains lay above the layer of charcoal clearly showing that the body was laid on top of the wood, for maximum exploitation of the ascendant thermal flow. Body cremation involves the use of high temperatures aiming at dehydrating the body, burning the fat and ultimately obtaining white mineralised bones. The temperature required can be obtained by using any type of wood (dense or light) provided that it is healthy and reasonably dry (20 % humidity). We recall that the temperature reached during combustion depends more on the mass and shape of the fuel wood than on the actual botanical species used (Chabal et al., 1999; Théry-Parisot, 2001).

5 - CONCLUSION

Data obtained so far suggest the existence of a coherent supply system, without a standard procedure and without precise and / or restrictive rules. All available woods were collected and used. Sporadic selection of preferred woods (symbolic meaning) must be taken into account.

Ultimately, the interpretation of charcoal data from funerary contexts may go beyond their immediate significance. Comparative studies may also provide important information on local vegetation, local ecology and plant biogeography.

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REFERENCES


BOUBY L., & MARINVAL P., 2004 - Fruits and seeds from Roman cremations in Limagne (Massif central) and the spatial variability of plant offerings in France. Journal of Archaeological Science, 31, 77-86.


PREISS S., MATTERNE V., & LATRON F., 2005 - An approach to funerary rituals in the Roman province by plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France). Vegetation History and Archaeobotany, 14, 362-372.

SCHIEß J., 1984 - Contrariar facere: renversements et déplacements dans les rites funéraires, in Aspetti dell’ideologia funeraria nel
mondo romano, Archeologia e storia antica. Annali dell’Istituto Universitario Orientale di Napoli, 4, 117-139.


