

# TRADE AND NEW PLANT FOODS IN THE WESTERN ATLANTIC COAST: THE ROMAN PORT OF IRUN (BASQUE COUNTRY)

LEONOR PEÑA-CHOCARRO.

Laboratorio de Arqueobotánica. Dept. Prehistoria. CSIC. Lab. Archeobiología. Musei Civici Como.

LYDIA ZAPATA.

Área de Prehistoria. UPV/EHU

## INTRODUCTION

Archaeological research in the Basque Country has been traditionally focused into the prehistoric period. Only recently, an increasing interest in later periods, particularly in the Roman phase, has been developed in the area. Both literary sources and archaeological research demonstrate the Romanization of this territory. In Guipuzcoa (the most eastern province of the Basque Country), evidence of the Roman influence has been found at several sites around the Bidasoa river. It is in this area that the city of Oiasso (Irun) developed in the middle of the 1<sup>st</sup> century BC (Benito 1988, Barandiarán 1973). Strabo (Geography III, 3, 8) described the location of the polis of Oidasouna (Oiasso), situated in an area between the Ebro Valley, the Pyrenees and the Cantabric sea. In fact, Irun is placed at the end of the Biscay Gulf, on the Bidasoa estuary (fig. 1). He added that the city was the end point of the route which connected Tarraco (on the eastern coast of the Iberian Peninsula) with the Cantabric area.

Oiasso was an important urban centre in the Roman period. It occupied a strategic position, with control over a major mining area, and with an important harbour situated in a well protected area. In addition, the city seems to have played a key role within the trading network, through both terrestrial and maritime routes, that linked different areas of this vast territory (Esteban & Izquierdo 1995, Izquierdo 1997, Magallón 1997, Urteaga 1995). Oiasso was also a *statio* of the Cantabric route which included ports such as Flaviobriga (Castro Urdiales), Lapurdum (Baiona) and Burdigala (Bordeaux) (Barandiarán 1973). Benito (1988) suggests that at least until the first half of the 1<sup>st</sup> century AD, the city was a centre dependent from Bordeaux. Oiasso would supply Bordeaux with metals and iron and, in return, it would receive vessels and other manufactures (Rodríguez Salís 1972, Urteaga 1995).



Fig. 1. Location of the site

## THE SITES: CONSERVATION AND SAMPLING

Plant remains have been recovered from two different sites: Calle Santiago (CS) and Calle Tadeo Murgia (TM) situated in the centre of the modern city of Irun. Both sites were discovered after a major sewerage work in the area.

The remains were located at 3 m. depth covered by a thick layer of mud under waterlogged conditions which have certainly allowed an excellent degree of preservation. Although this type of conservation is common for most parts of central and northern Europe, it is exceptional for the Southern Europe where plant remains are generally preserved by charring.

All plant remains here studied come from the fillings of the different harbour structures representing both intentionally dumped refuse material of various origins, and species of the natural vegetation. Dumping of rubbish into waterfronts seems to have been a constant in many areas. In fact, this practice originated serious problems in medieval times when municipal records show many attempts to regulate the sanitary problems

regarding the disposal of rubbish. This continuous dumping of rubbish in the waterfronts led to the accumulation of large deposits of refuse material which, as suggested by some authors (Milne & Milne 1978), could have been intentional to facilitate access to boats.

The excavation of Calle Santiago and Calle Tadeo Murgia did not include domestic areas, so the analysis of plant remains is biased towards rubbish accumulations and, therefore, not all food species are represented.

Two types of samples have been collected: soil samples systematically taken from different layers during the excavation, and samples of seeds visible to the naked eye and collected on the spot. Systematic samples were processed in the lab and wet sieved in a column of sieves with meshes between 4 mm and 0, 25 mm. The material was then sorted and plant remains separated.

### THE PLANT REMAINS

The two sites here discussed have produced a large amount of plant remains (seeds and fruits) (table 1) which can be classified into two large categories: a) economic plants (both cultivated and wild); b) plants without economic value (wild plants).

#### Cereals

Triticum sp. ....1

#### Fruits

Amygdalus communis .....1  
Corylus avellana L. \*\*\* (3 almost complete nuts)  
Fagus sylvatica .....313  
Ficus carica L. ....6  
Juglans regia L. ... \*\* (2 almost complete nuts)  
Olea europaea .....683  
Pinus sp. ....17  
Prunus avium/cerasus .....2823  
Prunus domestica/insititia .....185  
Prunus spinosa L. ....900  
Persica vulgaris .....987  
Quercus sp. ....\*\*\*  
Rubus agg. fruticosus .....106  
Vitis sylvestris .....11

#### Wild plants

Alchemilla sp. ....3  
Alnus glutinosa (L) Gaertner .....3  
Anagallis tenella L. ....12

Apium graveolens L. ....	21
Arbutus unedo L. ....	1
Atriplex spp. ....	9
Brassica sp. ....	3
Carex spp. ....	34
Chenopodiaceae ....	2
Chenopodium album L. ....	1
Chenopodium sp. ....	2
Chrysanthemum sp. ....	1
Cirsium sp. ....	2
Conium maculatum L. ....	1
Coronopus squamatus (Forskål) Ascherson ...	1
Cruciferae ....	1
Erigeron sp. ....	1
Galium sp. ....	8
Gramineae indet. ....	6
Gramineae indet. (Rachis) ....	1
Hypericum sp. ....	1
Juncus sp. ....	105
Mentha sp. ....	13
? Poa pratensis/trivialis ....	34
Polygonum aviculare L. ....	5
Polygonum hydropiper L. ....	1
Polygonum lapathifolium L. ....	1
Polygonum persicaria L. ....	4
Polygonum sp. ....	1
Potamogeton sp. ....	2
? Potentilla palustris ....	11
Potentilla sp. ....	13
Prunella vulgaris L. ....	44
Ranunculus acris/bulbosus/repens ....	18
? Ranunculus flammula L. ....	5
? Ranunculus sardous Crantz ....	2
Rumex acetosella L. ....	4
? Rumex aquaticus L. ....	4
Rumex crispus/acetosa/obtusifolius ....	6
Rumex sanguineus/conglomeratus ....	4
Salix sp. ....	11
Satureja sp. ....	3
Sedum sp. ....	11
Stellaria media (L.) ....	2
Suaeda maritima (L.) ....	6
Urtica dioica L. ....	1
Verbena officinalis L. ....	1
? Veronica sp. ....	1
Viola sp. ....	1
Indetermined ....	26

Table 1. List of species identified in Calle Santiago and Calle Tadeo Murgia (Irun)

The first category includes species which offer a great deal of information on subsistence, diet and on the economy of the site (food production, trade, etc). Their variety and abundance has allowed gaining some insights into the diet of the population of Irun. These data are of great interest since the information from the Iberian Peninsula, and in particular from the Atlantic coast for the Roman period is very limited.

The range of economic plants recovered includes both cultivated and wild species. Wild plants are mostly represented by fruits and nuts such as hazelnuts (*Corylus avellana*), acorns (*Quercus* sp.), walnuts (*Juglans regia*), sloes (*Prunus spinosa*), pine nuts (*Pinus* sp.) and beech fruits (*Fagus sylvatica*).

The cultivated plants include many different species such as cherries (*Prunus avium/cerasus*), plums (*Prunus domestica/insititia*), peaches (*Prunus persica*), almonds (*Prunus dulcis*), olives (*Olea europaea*), figs (*Ficus carica*), grapes (*Vitis vinifera*), and one single remain of a free-threshing wheat (*Triticum aestivum /durum*).

As for the second category, non economic plants, the remains are very rich. The species identified represent in most cases the natural vegetation, with different groups present: riparian species, marsh plants well adapted to salinity such as *Chenopodium* sp. and *Suaeda maritima*, and a large group of species characteristic of disturbed habitats.

Many of these species may have been collected from the wild for different uses: food, medicines, flavouring, etc.

## GATHERING OF WILD FRUITS AND NUTS

The role of wild plants within subsistence has been very important throughout prehistory. Although, agriculture was probably the main source of food during Roman times, wild resources were an important element of the population subsistence.

The plant assemblage from Irun has produced many species which were probably gathered from the surrounding environment. As suggested by M. Esteban (1997) Rome recognized the importance of two elements of the landscape: the *ager* and the *saltus*. The term *ager* refers to all cultivated land; *saltus* includes the forested mountain area where grazing and use of woodland resources were the dominant activities. The subsistence of the population of Irun was surely assured by the combined use of both spaces together with products arrived through



Fig. 2. Hazelnut shell

trade and exchange. Some of the species identified amongst the plant remains were most probably obtained from the *saltus*: hazelnuts, acorns, sloes, beech fruits etc.

### *Corylus avellana* L. (hazelnut).

Many fragments of the hazelnut pericarps (fig. 2) together with some whole fruits have been recovered at Irun. This species, a common food resource during prehistoric times, is well distributed across Europe. Hazelnuts appear well represented in the palynological record from the area; in particular it has been identified around the estuary of the river Bidasoa from 8000 BP (Sánchez Goñi 1996). According to Zohary & Hopf (1994), Romans cultivated hazelnuts for both their nuts consumed fresh, dried, or toasted, and for their branches used for wattle work. A well-known dish, recorded by Apicius, consisted of roasting hazelnuts mixed with honey, pine nuts, wine and spices.

### *Fagus sylvatica* L. (beech).

Many examples of beech fruits have been recovered from Irun (fig. 3). In many cases, only seeds have been identified. Beech is one of the characteristic species of temperate European woodlands. In the Basque Country, it is present already by the 5<sup>th</sup> millennium BC (Zapata 2002), whereas for the area of the Bidasoa river, *Fagus* pollen has been identified only after 2740 BP (Sánchez Goñi 1996). Edible oil can be extracted from its fruits, which seems to have been widely used throughout prehistory. Rivera & Obón (1991) mentioned the use of roasted beech seeds as human food. They added, however, that the presence of toxic alkaloids forces its consumption in small quantities. The remains from Irun are the first record for the Iberian Peninsula.



Fig. 3. Fruit and cupule of beech



Fig. 4. Pine nut and pine scale

#### *Quercus* sp. (acorns)

Remains of both shells and whole fruits have been recovered. Acorns are one of the commonest species in archaeological contexts. Their remains have been identified from all periods and areas. Acorns are very rich in proteins and, in famine periods, they have replaced cereals. Once detoxification has been carried out, acorns can be used for making bread, biscuits, etc. The pollen analysis of the area indicates that oaks were very abundant in the region, and therefore the remains identified are likely the results of gathering activities.

#### *Pinus* sp. (pine)

Several nuts and bracts have been found at Irun (fig. 4). Pine was a well-known species in Roman times when according to some authors, pine forests started to be managed. It was a much appreciated species for its wood, widely used for the construction of ships (Bandini Mazzani & Taroni 1989) and a wide variety of objects, and for its nuts commonly cited in Apicius recipes. Both nuts and bracts have been also recovered from other Roman sites. In many cases, they appear associated to votive offerings in temples (Willcox 1977), demonstrating that both nuts and cones were actually traded.

#### *Juglans regia* L. (walnut).

Numerous remains of walnuts (mostly shells) have been identified (fig. 5). Apart from an immature fruit, there is no evidence of whole fruits. Walnut remains from the Iberian Peninsula are very scarce. The first data from the Western Pyrenees go back to 2000 BP (Jalut 1992) whereas in the Bidasoa estuary Sánchez Goñi (1996) identifies its pollen, together with pollen of *Castanea* and *Cerealia* after the latest

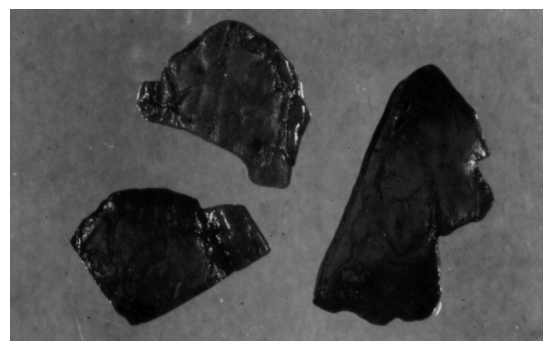


Fig. 5. Fragments of walnut shells

C-14 date ( $2740 \pm 90$  B.P.). So, for the Roman period, we can assume its presence in the area. It is likely, then, that walnuts were gathered from the local populations which could have been somehow managed.

Walnuts were very much valued by Romans. Apicius uses them in many recipes of sauces and sweets. André (1981) notes that immature walnuts were highly appreciated by the Romans being sold in markets at twice the price of the mature specimens.

Apart from nuts, several wild fruits have been identified: sloes (*Prunus spinosa*), *Rubus* sp., *Arbutus unedo* etc, which certainly represent the exploitation of the natural environment.

### AGRICULTURE AND HORTICULTURE

There is an extensive literature on Roman agrarian practices by agronomists such as Cato, Varro or Columella with important information on agriculture, horticulture and arboriculture. Important works are

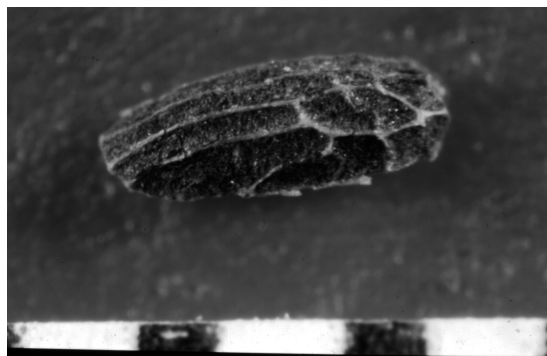


Fig. 6. Seed of verbain (*Verbena officinalis*)

two books of Columella, *De Re Rustica* and *De Arboribus*, which illustrates with great detail the agricultural practices of the time. Current knowledge about Roman agriculture is very wide with a good archaeobotanical evidence of the cultivation of cereals and pulses. However, in Irun data on agriculture is very scarce. A single charred grain of a free-threshing wheat is the only remain recovered. This is probably related to the nature of the contexts sampled (no domestic areas have been identified in these sites).

As for other categories of plant remains, literary sources indicate that a large variety of fruits and vegetables was cultivated both in the rural areas and in the city gardens. Dupont (1992) notes that vegetables such as cabbages, cucumbers, lettuces, leeks, onions, garlic, etc, together with many different herbs, were actually cultivated throughout the year. In fact, the archaeobotanical evidence from different areas indicate a wide variety of garden plants and herbs used for medicines and flavouring. The plant assemblage from Irun has produced some examples of species which could have been cultivated in gardens such as *Brassica* spp., *Apium graveolens*, *Verbena officinalis* (verbain) (fig. 6), *Satureja* sp. etc.

#### INTRODUCTION OF NEW SPECIES: ARBORICULTURE AND TRADE

The large array of cultivated plants represented at Irun include several species which were absent from the natural vegetation of the Basque Country, and therefore, they must have been introduced from somewhere else outside the region. This is the case of various tree species, basically fruit trees such as plums, cherries, peaches, olives, figs etc.

Consumption of wild fruits seems to have been a constant throughout prehistory, but domestication of

many species could only take place when grafting techniques began to be mastered, and this, for most species, occurred around the 1<sup>st</sup> millennium BC, several millennia after the emergence of cereal agriculture (Zohary & Hopf 1994). Greeks and Romans certainly strengthened fruit cultivation and were responsible for the introduction of many species in large parts of Europe. In fact, Greig (1983) indicates that between the 1<sup>st</sup> and the 2<sup>nd</sup> centuries AC Rome introduced new species in areas where they did not previously exist. These were quickly integrated into the diet of the indigenous communities and, in many cases, started to be locally cultivated. Distinguishing whether these are Roman imports or the first examples of local cultivation is often very difficult. The sites under study have produced many domestic species such as olives, plums, cherries, figs, grapes, peaches. In some cases we are dealing with the first examples of such species for the Atlantic part of the Iberian Peninsula. From all, olives are the only ones which were without doubts imported as their cultivation is impossible in the Cantabric region. Many of these Roman imports were certainly brought as part of the food supply of the city, but could have also been goods to be redistributed towards other areas. In fact, imports from areas of Gallia and Hispania were intensively traded and, it is likely that Irun with its strategic position, acted as a landing place for the redistribution of goods. There is evidence for a vast network of routes which communicated the Cantabric ports to the Ebro valley region increasing trade and commercial activities. Within this framework, Oiasso was equipped with new infrastructures which established the basis for intensification of trading activities. Among the commodities transported plants were included. The pottery recovered at the sites shows clear relationships with areas of the British Channel, the Alps and different regions of the Iberian Peninsula (Urteaga 1995, Urteaga & López Colom 1994).

The perishable character of many of the species identified (peaches, cherries, plums, figs, etc) which certainly made difficult long-distance transport, was overcome by using different preservation techniques such as drying (figs, grapes, plums, etc.) or preservation in liquids (olives, peaches) (Wilcox 1977, André 1981).

The species discussed below are examples of Roman introductions, even if some of them may have been already cultivated in Irun:



Fig. 7. Examples of peach drupes

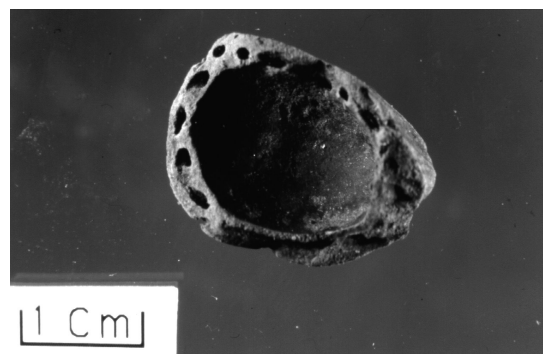


Fig. 8. Shell of the only example of almond from Irun

*Prunus avium/cerasus* (sweet and sour cherry)

This is a very common species in the assemblages from Irun. It appears in all samples and in large numbers. Distinction between both species, based just on morphological traits, is very complicated. Before domestication, wild cherries were certainly gathered as it has been evidenced in many sites of Central Europe. According to Pliny (XV), cherries were introduced in Italy during the 1<sup>st</sup> century BC. In the Iberian Peninsula, remains of cherries are documented in an Iron Age site in Catalunya (Alonso y Buxó 1991). According to Parker (1973), the Iberian Peninsula exported cherries together with other products.

*Prunus domestica/insititia* (plum)

From the Neolithic period wild plums have been gathered in many European areas. However, its cultivation must have occurred in a much later period, probably at the same time as apples and pears (Zohary & Hopf 1994). The earliest evidence of grafting and cultivation of plums comes from the Roman period. For the Iberian Peninsula there is no evidence of cultivated plums before Roman times, and therefore, the remains from Irun are the first records.

*Prunus persica* (peach).

Peaches are extremely abundant in all samples from Irun (fig. 7). Roman cultivation did not start until the 1<sup>st</sup> century AD, and from this moment onwards it spread very quickly throughout Europe. Data from the Iberian Peninsula is very scarce; peaches have been recovered from both Calle

Santiago (Peña-Chocarro & Zapata Peña 1996, 1997) and Tadeo Murgia. In addition, remains have been also identified from a shipwreck in Catalunya (Buxó 1989). Although peaches could have been preserved in honey or wine (Callender 1965) and transported in vessels and traded, the examples from Irun may also represent the starting of local cultivation.

*Prunus dulcis* (almond)

A single remain of the pericarp of an almond (fig. 8) has been identified in Tadeo Murgia. According to Zohary & Hopf (1994), almonds were domesticated around the 3<sup>rd</sup> millennium BC at the same time as olives, grapes and dates.

In Roman times almonds were very much appreciated. They were consumed as dry fruits just before dinner to stimulate drinking (Atheneus II, 52, d, cited by Salza Prina Ricotti 1987). The same author records the use of almonds to prevent drunkenness. Apicius described their use for the preparation of many sauces.

*Olea europaea* (olive).

Many remains of olives have been recovered from Irun (fig. 9). As mentioned earlier, olives seem to be the only imported species since it is a typical Mediterranean plant and its pollen is not present in the diagram from the Bidasoa estuary (Sánchez Goñi 1996). It is, then, very likely that it is the result of commercial activities.

According to literary sources, olives were widely used by the Romans being part of all meals. Its easy preservation allowed its consumption throughout the year.



Fig. 9. Olive stone

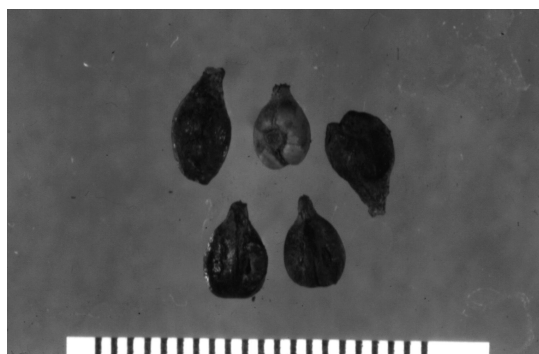


Fig. 10. Grape seeds

*Ficus carica* (fig)

The remains of figs are very abundant at Calle Santiago. Wild fig is not present in the Basque Country so this species, together with olives must have been imported from somewhere else. Its trade as dry figs is well documented in the archaeological record from Europe (Wilcox, 1977; André, 1981).

*Vitis vinifera* (grape)

In Calle Santiago many remains of grapes have been found (fig. 10). Although *Vitis vinifera* is a Mediterranean species, it tolerates cooler conditions than olive. The wild grape *Vitis vinifera* ssp. *sylvestris* thrives in the Cantabric and the earliest record from the Basque Country come from the Iron Age, from Cortes de Navarra (Cubero 1991). The pollen analysis of the Bidasoa estuary (Sánchez Goñi 1996) shows the presence of a couple of *Vitis* pollen grains after the last C-14 date ( $2740 \pm 90$  B.P.) which may indicate a late exploitation of this species.

**PLANTS AND DIET AT IRUN**

The analysis of plant remains from Irun has provided an important assemblage of more than 6000 remains from which a large part is composed of economic species. The assemblage includes many fruits and nuts well documented also in the literary sources. Looking at the possible origin of the species, we put forward the following classification:

## Imported species: olives

Species likely to have been imported, although they may have been already introduced, and therefore, locally cultivated: plums, cherries, peaches, almonds and figs

Species cultivated from prehistoric times, but that could have been subjected to trade: wheat and grapes

Species gathered in the surroundings from wild stands of managed plants: sloes, walnuts, pine, hazelnuts, acorns, *Rubus* sp.

The study of the diet of the Roman port of Irun relies on the food remains found at the site together with the more general information provided by the literary sources. As we have seen above, there was a large variety of species which included fruits, nuts, garden plants etc. There is also broader information on the type of meals and banquets provided by the written sources. Food was mainly consumed three times during the day: breakfast (*ientaculum*) consisted of bread, wine, honey and sometimes olives and dates; lunch (*prandium*) included bread, fruit and cheese, whereas for dinner (*cena*) different dishes of meat, fish were consumed together with dried fruits and sweets (Goodenough 1979). Among the species consumed for dinner, Ovid in his *Metamorphosis* refers to nuts, figs, dates, plums, apples and grapes.

The assemblage of plant remains recovered from Tadeo Murgia and Calle Santiago is of great importance for two reasons: 1) because of its richness and excellent degree of preservation, 2) because it is dated to a moment when many of the species present are implanted for the first time in the new territories. The plant remains analysis definitely contributes to throw some light into the study of the diet of the Irun population in Roman times. In addition, it supplies additional information on the array of products that were traded. The samples studied seem to confirm the products mentioned in the literary sources, so there is an ample assortment of fruits: cherries, plums, peaches, grapes, figs, olives and almonds

which were consumed either fresh or dried. In addition wild fruits and nuts have been also documented: sloes, strawberry tree fruits, *Rubus* sp., beech fruits, pine nuts, hazelnuts, walnuts, acorns.

Similar findings have been documented in other areas of the Empire, for example in London, at the Thames waterfront different nuts, fruits and other seeds have been recovered (Jones 1980) including pears, apples, figs, strawberries, etc (de Moulins 1990). Willcox study (1977) of exotic food plants from Roman London includes pine nuts, walnuts, peaches, cherries, grapes, and several spices. Many other Roman centres from Britannia have also produced similar plant remains.

The same applies to other European areas. Davies (1971) mentions pears, cherries, plums, peaches, walnuts, grapes, chestnuts, hazelnuts and beech fruits in the Roman fort of Vindonissia (Germany). In Holland, Kooistra (1996) notes more or less the same species. Data from several sites in Italy show the presence of an almost identical array of plants with several nuts and fruits (Bandini Mazzanti & Taroni 1989), including pomegranates (Castelletti & Rottoli 1998). The remains from Irun show, therefore, an enormous coherence with both data from literary sources and archaeobotanical data from elsewhere within the Roman Empire.

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