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# The introduction and diffusion of peach in ancient Italy

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## Abstract

Questo articolo nasce dalla cooperazione di ricercatori che portano avanti indagini archeobotaniche e iconografiche in campo nazionale (Gruppi di interesse scientifico e tecnico operativo di Paleobotanica e di Botaniche Applicate della Società Botanica Italiana) ed internazionale (International Work Group for Palaeoethnobotany). L’idea di cooperazione su una pianta di notevole interesse culturale è nata in seno al progetto PaCE, che vede riunita in questo volume molta ricerca centrata sulla ricostruzione della storia botanica d’Europa. In questo lavoro sono state verificate dagli autori sia le rappresentazioni iconografiche che le notizie provenienti da fonti letterarie sul pesco. Il pesco venne introdotto in Italia nella prima metà del I sec. d.C. Le fonti storiche indicano la sua presenza da circa il 40 d.C., ma i reperti archeobotanici sembrerebbero retrodatare di almeno un decennio la sua presenza, almeno in Italia settentrionale. I macroresti di pesco sono costituiti quasi esclusivamente dai resistenti endocarpi legnosi o da frammenti degli stessi. Sono spesso rinvenuti in quantitativi scarsi in contesti funerari ed in zone portuali di età Romana imperiale, ma talvolta trovati in grandi quantità in sedimenti archeologici ricchi d’acqua, sepolti e spesso conservati in condizioni anossiche (i cosiddetti *waterlogged remains* riportati nella letteratura inglese, la cui traduzione italiana “resti sommersi” non sembra rendere a pieno la denominazione originale di quei macroresti considerati un tempo come particolari resti mummificati). La loro presenza in giardini privati e ville rustiche di età classica fa pensare che il pesco fosse utilizzato e apprezzato sia a scopo ornamentale che alimentare. Dati preliminari ottenuti da ricerche morfobiotomiche condotte sui noccioli di pesca sembrano indicare l’esistenza di diverse cultivar già durante il primo periodo di coltivazione in Italia (del resto erano state importate dall’Asia dove erano già in fase ben avviata di coltivazione) e che una grande variabilità si sia conservata anche nel Medioevo. I ritrovamenti di età medievale e rinascimentale suggeriscono che all’epoca il consumo di pesche era ridotto, se non limitato, a contesti abitativi particolarmente ricchi quali castelli o palazzi signorili.

## 1. Introduction

*Prunus persica* (L.) Batsch is a tree belonging to the family Rosaceae, subgenus *Amygdalus*, section *Euamygdalus*. Its botanic framing in the genus *Prunus* dates back to 1927 (Bailey). It is well known for its tasty and fleshy fruit and widely cultivated in the Mediterranean area. It was exported by Spanish to Americas during the 16<sup>th</sup> cent. and again from China during 19<sup>th</sup> cent.

Around the second half of the 17<sup>th</sup> cent. Bartolomeo Bimbi, painter of the Medici court, represented in its still life paintings more than thirty types of peaches. At the beginning of the 20<sup>th</sup> cent. more than 120 peach cultivars were known in Italy (Molon 1901).

Available information on the introduction of peach tree into Europe comes from independent data such as written sources, artistic depictions, and archaeological evidences. All these independent sources have to be considered in order to give a more complete reconstruction on peach history.

Considering botanical remains found in archaeolo-

gical contexts, the fact that only the stone fruit (woody endocarp) shows diagnostic features useful to determine the species deserves mention. Both pollen (Beug 2004) and wood of peach cannot in fact be differentiated from those of other *Prunus* species. Wood anatomy of *Prunus persica* is in fact exactly alike to that of *Prunus dulcis*, and very similar to other *Prunus* species (Schweingruber 1990).

Once believed as an indigenous tree of Persia, its recent genetic characterization led to establish (Bassi and Piagnani 2008) that its real geographic provenance is western China. It was cultivated in Persia (present Iran) few centuries BC and was probably introduced into Greece three centuries BC (Spiegel-Roy 1986; Zohary and Hopf 2000) and into central and Western South-European regions by Romans; in Rome it was well known in the second half of 1<sup>st</sup> cent. AD (*Lucius Junius Moderatus Columella, De Re Rustica*, 60-65 AD). Pliny the Elder (*Caius Plinius Secundus*) mentioned many times peaches, *mala persica* (*Mala appellamus, quamquam diversi generis, persica et granata...*, XV.39) probably introduced thirty years

before the writing of his work *Naturalis Historia* (published in 77-78 AD), e.g., in the first half of the first cent. AD.

In Roman times, peaches were pickled (preserved in vinegar) as indicated in the recipes (*Duracina Persica ut diu durent: eligito optima, et mitte in muriam postera die exime, et spongiabis diligenter, et collocabis in vas. Fundes salem, acetum, satureiam*, II. 28) ascribed to Apicius (*De re coquinaria*) in a cooking book probably dating back to the 4<sup>th</sup> cent. AD. Marcus Gavius Apicius was a notorious Roman gourmet and lover of luxury who actually lived in the 1<sup>st</sup> cent. AD. He is sometimes mistakenly said to be the author of the Roman cookbook, which was actually compiled about 300 years later; there is in fact no early evidence that Apicius was an author of it.

In Northern Italy the oldest peach finds are dated at the latest at the beginning of the first cent. AD (Augustan-Tiberian age 29 BC-37 AD) and consisted in charred endocarps. The funerary, either votive gift or banquet rests, were both found in Lombardy, in the necropolises of Angera, near Varese (Castelletti 1985) and of Manerbio, near Brescia (Castiglioni and Rottoli unpublished, this article). Bandini Mazzanti *et al.* (2001a, 2001b) hypothesized a wide consumption of large size peach fruits in Emilia Romagna, especially in *Mutina* (the present Modena) since the first decades of the first cent. AD (15-40 AD). Peach tree is portrayed in the *domus* wall paintings of the towns destroyed by the Vesuvius eruption of 79 AD, and its fruit rests are only partly investigated (e.g. Ciaraldi 2000; Robinson 2002; Ciarallo 2004), but not very abundant (Ciarallo, personal communication). It is worth to mention the fact that peach remains found in the filling of the *euripus* of a rich *domus* from *Privernum*, a Roman town of Southern Latium (Giardini, Sadori and Susanna, this article) occurred in the same half century (50-100 AD) of the dramatic destruction of the Roman towns at the foot of Vesuvius. Castelletti (1973-1974) reported on the finding of the content (162 peach endocarps) found in a wine amphora (possibly dated at the 1<sup>st</sup>-2<sup>nd</sup> cent. AD from an excavation of the Roman harbour of *Aquileja*). Hundreds of peach stone fruits have been recovered in Rome, from the filling (archaeologically dated at the second half of 4<sup>th</sup> cent. AD) of the main drainage sewers of Colosseum (Follieri 1975; Celant 1998); the obstruction occurred in correspondence with the last games performed in the amphitheatre.

Peach trees found suitable environmental conditions in the Mediterranean basin since their spread in central and western Mediterranean carried out by Romans. Historical sources seem to indicate that its introduction into the Gallia province is reported to have occurred particularly early and not through Italy, but through the Balkans (Bassi and Piagnani 2008). Anyway a passage

through Italy should be admitted, unless an unlikely northern Alps path is inferred. In Spain, Catalonia records the oldest find at Lleida (Alonso Martinez 2005), dated at the 1<sup>st</sup> cent. AD.

The diffusion of this fleshy fruit towards the north of the Roman empire seems to have occurred early too. Endocarps from Neuss on Rhine river (Knörzer 1967, 1970, 1984) and from Xanten (Knörzer 1989) are among the earliest finds (1<sup>st</sup> cent. AD); in 2003 Bakels and Jacomet, in a review on luxury fruits introduced by Romans into central Europe, evidenced that peach was found in five central European sites before 50 AD, and in fifteen sites between 50 and 100 AD (e.g. Jacomet 1988; Jacomet and Wagner 1994). It disappeared from the archaeobotanical central European records after 250 AD (Bakels and Jacomet 2003).

## 2. Peach in iconography

Different authors mentioned the presence of peach representation in Pompeian pictures (Comes 1879; Casella 1950; Jashemshki 1979, Jashemski *et al.* 2002; Ciarallo, 1992). The oldest artistic representations of peaches in Italy seem in fact to be the ones found in two fragments of wall paintings, dated back to the 1<sup>st</sup> cent. AD, in Herculaneum, Casa dei cervi, now preserved in the National Archaeological Museum in Naples (fig. 1). The historical records of Martial (Epigrams XIII, IV) testify that in that century this fruit was appreciated and widespread among Romans. The Pompeian farmers were used to graft this new species of *Prunus* on apricot and plum trees (De Caro 2001). Other details of this fruit are recorded in the *Domus Sirici*, owned by a rich merchant, in Pompeii (Comes 1879) in both cases, we can argue that the representation of a rare fruit was a symbol of power for the rich owner of the house.

On the contrary, the mention of peaches for the impressive mural paintings of the Villa of Livia, the famous Augustus' wife, at *Prima Porta* (Rome) is not correct (Bellini and Nin 2008). In these frescos, which are among the most cited representations of Roman gardens, twenty-four different species were identified (Caneva 1999; Caneva and Bohouny 2003). The main part of the species, showing a clear symbolic purpose, are however native plants of the Mediterranean area, typical of its forests and maquis, which are common in the surroundings of Rome (for example *Arbutus unedo*, *Laurus nobilis*, *Nerium oleander*, *Quercus ilex*, *Quercus robur* gr., *Cornus mas*, *Phyllitis scolopendrium*) or widely cultivated (such as *Cupressus sempervirens*, *Cydonia oblonga*, *Pinus pinea*, *Punica granatum*, *Rosa centifolia*, *Phoenix dactylifera*).

As regards the Augustan age, the presence of peach



1. - Herculaneum: Casa dei cervi (IV, 21). Fragment of a fresco (inv. 8645) with peaches, now exhibited in the National Archaeological Museum of Naples.

2. - (right) Roma: Ara Pacis. Drupe resembling peach. The similarity with peach is an artefact due to restoring interventions.



in some “festoons” and sculptures from Rome (see those of *Ara Pacis*) is dubious, because some parts, such as the fruit in the hand of the child (fig. 2), that resembles the peach, are interventions carried out in more recent restoration activities. In this case, the age of the archaeological testimony should date back to some decades earlier. Unfortunately, the identification of plant species in sculptures is much more critical also for the absence of colour and of other diagnostic features parameters, and for the possible confusion with other fruits of plant species of the family Rosaceae. A further testimony of the entry of this fruit in the Roman context is the mosaic floor of imperial Villa del Casale in Piazza Armerina (Sicily, 4<sup>th</sup> cent. AD), where are depicted many fruits, including peaches.

### 3. The diffusion of peach in Roman times

#### 3.1. Friuli-Venezia Giulia, Lombardy, Piedmont, Veneto, Liguria and Tuscany

The oldest peach attestations outside Emilia Romagna concern some incineration tombs from Lombardy (fig. 3). Peach appears in the necropoles of Angera (Varese; Castelletti 1985) and Manerbio (Brescia; Castiglioni and Rottoli, unpublished; excavation Soprintendenza Archeologica della Lombardia) in tombs of Augustan-Tiberian age (29 BC-37 AD). Other finds from sepulchral contexts appear to be of younger age: peach endocarps were found in Cerrione (Biella; Castiglioni *et al.* in press) in one tomb of

Flavian-Trajan age (69-117 AD), in Mariano Comense (Como; 1<sup>st</sup>-2<sup>nd</sup> cent. AD; Castiglioni *et al.* 1999a) and in Como, at the necropolis of *Via Benzi* (end 3<sup>rd</sup>-4<sup>th</sup> cent. AD; Castiglioni and Rottoli 2006).

As far as the inhabited areas, the dry contexts provided few charred remains: the mentions (Rottoli 1995) concern Angera (Varese, 3<sup>rd</sup>-4<sup>th</sup> cent. AD). Old finds, not verifiable, regard a well of Casaleone (Lago di Garda, Verona) and a building of 2<sup>nd</sup>-3<sup>rd</sup> cent. AD in *Mediolanum*, the present Milan (Sordelli 1896).

More consistent materials are from wet contexts. Castelletti (1973-1974) studied 162 endocarps from the excavation of the Roman harbour of *Aquileja* (Udine). They were conserved in an amphora found in association with materials of 2<sup>nd</sup> cent. AD. On the basis of the stone fruits morphology and of the characters proposed by Guerriero (1962), the author proposed that all the 162 macroremains belong to only one cultivar.

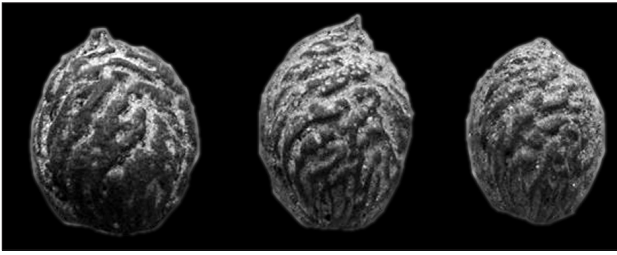
Another relevant find concerns the materials from a well in Vercelli, located in Corso Prestinari (middle Imperial Age, excavations G. Spagnolo, Soprintendenza Archeologica del Piemonte; Castiglioni, unpublished, table 1, fig. 4). In this case the morphological variability suggests the consumption of a wide variety of cultivars. Another find from Vercelli is that of *Palazzo Dugentesco* (Ospedale di Sant'Andrea) and consists in few endocarp fragments probably dating back to 2<sup>nd</sup> cent. AD (Nisbet 1984). About one ten remains are from a well of Roman age found in Vicenza-San Marcello (excavations M. Rigoni, Soprintendenza Archeologica del Veneto; Castiglioni and Rottoli unpublished).

The scarcity of analyses on inhabited areas of



3. - Italian sites of Roman age with archaeological records of *Prunus persica*.

1. Cerrione (Castiglioni *et al.* in press); 2. Vercelli (Castiglioni, unpublished); 3. Angera (Castelletti 1985); 4. Como (Castiglioni and Rottoli 2006); 5. Mariano Comense (Castiglioni *et al.* 1999a); 6. Milano (Sordelli 1896); 7. Manerbio (Castiglioni and Rottoli, unpublished); 8. Casaleone (Sordelli 1896); 9. Vicenza (Castiglioni and Rottoli, unpublished); 10. Aquileia (Castelletti 1973-1974); 11. Filattiera (Rottoli and Negri 1998); 12. railway Modena - Sassuolo (Marchesini and Marvelli 2007); 13. Russi (Bandini Mazzanti *et al.* 2001a, 2001b); 14. Bazzano (Bertolani Marchetti and Forlani 1980; Marchesini *et al.* 2008); 15. Rubiera (Bandini Mazzanti *et al.* 2001a, 2001b); 16. Modena (Bandini Mazzanti and Taroni 1988; Bandini Mazzanti *et al.* 2001a, 2001b; Bosi *et al.* 2007); 17. Luni (Rottoli, unpublished); 18. Roma (Follieri 1975; Celant 1998); 19. Privernum (Giardini, Sadori, Susanna, unpublished); 20. Naples, (Allevato *et al.*, in press); 21. Pollena Trocchia (Di Pasquale, unpublished); 22. Pompeii and Herculaneum (Ciarallo 2004; Ciaraldi 2007, Robinson 2002).



4. - *Prunus persica* uncharred endocarps from Vercelli, well, 2<sup>nd</sup>-3<sup>rd</sup> cent. AD (from left to right: 30x23.5 mm; 31.5x22 mm; 27.5x20 mm).

5. - Modena - Piazza Grande - via Selmi (historical city centre). The white rectangle marks the archaeological site of Roman age (15-40 AD).



republican or first Imperial Age do not allow to establish the precise moment of the introduction of peach in these regions. The presence of some stone fruits in tombs of Augustan-Tiberian age, could be interpreted as a limited diffusion of the species, still considered a prestige good and therefore offered in graves. The burials of Manerbio and Angera cannot be anyway considered of a high social level.

The diffusion of peach in Roman ages in the territories facing Ligurian and northern Tyrrhenian seas appears to be rather limited. At Luni, at the border between Liguria and Tuscany, the analyses carried out in many excavations of the Roman colony, indicated only one dubious remain in the extrarurban drainage system (Rottoli, unpublished data, excavation A.M. Durante, Soprintendenza Archeologica della Liguria). At Filattiera-Sorano (Massa Carrara, Rottoli and Negri 1988) in the Tuscan inland, only one fragment of the peach stone fruit was found in the archaeological phase ascribed to the late 1<sup>st</sup> cent, beginning of the 2<sup>nd</sup> cent. AD; in the following phases (until the 4<sup>th</sup> cent. AD) there are no such remains.

### 3.2. Emilia Romagna

The archaeological record of *Prunus persica* endocarps for the Roman period (fig. 3) is really remarkable in the region and consists of finds from several sites, different contexts and ages. The oldest finds are from the historical city centre of Modena and will be fully discussed in the following.

Two charred endocarps are from cremation tombs of a necropolis (railway Modena-Sassuolo, Marchesini and Marvelli 2007) dated at the end of 1<sup>st</sup> cent. BC - beginning 2<sup>th</sup> AD. Peach stone fruits in different amounts were recovered from living contexts of the region. 108 uncharred endocarps are from a kitchen well of domus of Russi (Ravenna) filled from 1<sup>st</sup> to 4<sup>th</sup> cent. AD (Bandini Mazzanti *et al.* 2001a, 2001b). Two hiding wells, Casini well (Bazzano near Bologna, end 5<sup>th</sup> - beginning 6<sup>th</sup> cent.

AD, Bertolani Marchetti and Forlani 1980; Marchesini *et al.* 2008) and one from Rubiera (Reggio Emilia, 6<sup>th</sup> cent. AD, Bandini Mazzanti *et al.* 2001a, 2001b) recorded the presence of respectively and 10 and 7 uncharred endocarps.

In the ancient Roman town of *Mutina* (present Modena) more than one hundred of uncharred peach endocarps have been found among the materials coming from a Roman channel dated at 15-40 AD (Bandini Mazzanti and Taroni 1988; Bandini Mazzanti *et al.* 2001a, 2001b; Bosi *et al.* 2007; Rinaldi, work in progress) located in the historic city centre (fig. 5). The excavation of the Roman channel in Modena resulted extremely interesting: the channel in exam, perhaps artificial, was probably a part of the water regulation system active during the Republican age and it was used to defend the city under their walls (Labate and Malnati 1988). During the first Imperial Age the small channel was filled with upside down amphoras and a lot of inorganic material (e.g. ceramic, glass, metal ones) and organic (bones, woods, charcoals, seeds and fruits) (Labate and Malnati 1988) to permit the expansion of the urban area (Macchioro 1988). The materials found, allowed to exactly place chronologically the plug up of the channel (Macchioro 1988). *Mutina* (the toponym perhaps has an Etruscan origin, "cairn" or "average up" - Pittau 2004) was founded as a Roman colony in 183 BC and maintained a strategic and military role with a very solid economy: until the 1<sup>st</sup> cent. AD *Mutina* was defined as *opulentissima* by *Pomponius Mela* (*Chorographia*, II, 60). It was in fact one of the richest cities of the Po plain, together with *Patavia* (Padova) and *Bononia* (Bologna) (Calzolari 2008). The finds found in the excavation of the channel give an imagine of a rich society, with the presence of luxury objects, also coming from exotic places (Labate and Malnati 1988). That hypothesis has been confirmed by archaeozoological analysis (De Grossi Mazzorin 1988; Roncaglia 1998), which have shown the presence of a large variety of animals (cows, goats, sheeps, pigs,



6. - *Prunus persica* uncharred endocarps from a drainage channel, *Mutina*, 15-40 AD (length: 1 - 22.89 mm; 2 - 27.84 mm; 3 - 25.59 mm; 4 - 23.50 mm).

dogs, roes, hares, cocks, geoses, reptiles), besides lots of ichthyic finds, signs of consumption of valuable freshwater (pikes, carps) and seawater (red snapper, sea-bass) fishes, evidence of wellness and richness. Archaeobotanical finds confirm the hypothesis of luxury, as besides peaches there was a high number of species used for food, e.g. *Olea europaea*, *Prunus avium*, *P. dulcis*, *Cucumis melo*, *Citrullus lanatus*, *Pinus pinea*, *P. cembra*, *Ficus carica*, *Juglans regia*, *Morus nigra*, *Diospyros lotus*, *Punica granatum*, *Vitis vinifera* subsp. *vinifera*, *Fragaria vesca*, *Coriandrum sativum* (Bosi *et al.* 2007). Traces of copious consumptions of fish and meat (source of animal proteins), conspicuous and various presence of fleshy fruits and olives, traces of aromas and spices, are all elements which shown a luxury food consumption (van der Veen 2003) in Modena at the beginning of the Imperial Age.

Lots of peach stone fruits (fig. 6) come from the filling of the Roman channel. The average measures of 106 endocarps (length - 25.5 mm; width - 19.6 mm; thickness - 15.3 mm - table 1) are almost the same of one hundred one coming from the historical city centre of Imola dated at 15<sup>th</sup> cent. AD (this article, table 1), slightly smaller than those of the Coliseum of Rome dated at the second half of 4<sup>th</sup> cent. AD (this article, table 1). The evidence indicates that peaches in Modena were largely consumed at the beginning of the Imperial Age and that they showed a considerable size, either in the case they were locally cultivated, or imported.

The abundance of peaches in Modena at the beginning of 1<sup>st</sup> cent. AD points out a problematic node.

The introduction of peach in Italy is datable during the 1<sup>st</sup> cent. AD (Bellini and Nin 2008); peach stone fruits found in the small channel archaeologically precisely dated (15-40 AD) put in evidence that peaches could be really affirmed in Modena (a pretty rich colony but in North Italy, far from Rome and other more important areas) since the beginning of the 1<sup>st</sup> cent. AD. This archaeobotanical evidence suggests some hypotheses:

- the introduction of peach in Italy has to be antedated to the end of Republican age, or at latest to the first decades of the 1<sup>st</sup> cent. AD
- peach arrived to Northern Italy through the Balkan way, as it seems to have happened in France during the 1<sup>st</sup> cent. AD (Bassi and Piagnani 2008), as several archaeological finds show either in areas under the Roman occupation or not (Bellini and Nin 2008)
- the presence of peach endocarps in Modena could be from imported material coming from Rome and Southern Italy and not from plants cultivated *in situ*. The cookbook ascribed to *Apicius*, probably gathering Roman recipes aging from 1<sup>st</sup> to 3<sup>rd</sup> cent AD, suggests to use an aromatic brine (Gentilini 2004) for conserving peaches and, maybe, to transport them.

### 3.3. Latium

Peaches archaeobotanical record from the centre of the Roman empire is surprisingly poor. In fact, few sites have so far provided peach endocarps, both in Rome and in its surroundings. This fact can be either due to the scarce attention paid from classical archaeologists to organic remains or to the fact that archaeological strata

	MODENA small channel (ancient town of)			AQUILEIA wine amphora (harbour of <i>Aquileia</i> )			VERCELLI well (Corso Prestinari)			ROMA west and east sewers (Coliseum)			IMOLA well (Piazza Matteotti)			MONCALIERI kitchen drain (Castle's tower)		
chronology	15-40 AD			2 <sup>nd</sup> cent. AD			2 <sup>nd</sup> - 3 <sup>rd</sup> cent. AD			2 <sup>nd</sup> half of 4 <sup>th</sup> cent. AD			1400-1480 AD			15 <sup>th</sup> cent. AD		
endocarps (n.)	106			162			18			253			92			26		
(mm)	mean	max	min	mean	max	min	mean	max	min	mean	max	min	mean	max	min	mean	max	min
length	25,5	30,1	18	24,2	28	21	29	34	25,5	23,8	35,3	14	25,6	31,3	15,1	25	31	18
breadth	19,6	23	12,6	18,1	21	16	21,9	26	18,5	19	27,8	11,7	20,3	25,7	13	19,8	22,5	17
thickness	15,3	18,3	10,5	13,6	16	12	17,1	22,5	13,5	15,3	20,9	10,1	15,6	22,5	10,1	15,4	18,5	12,5

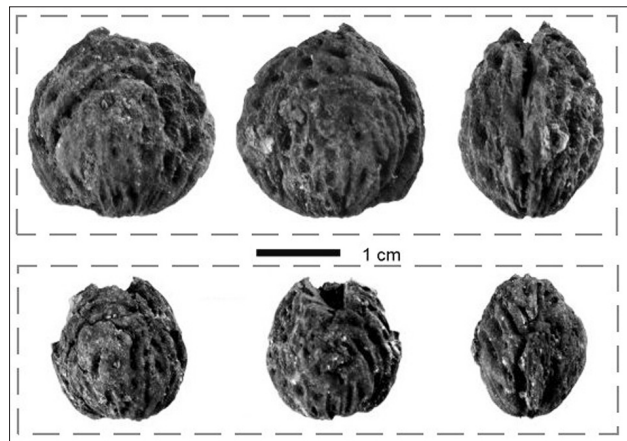
Table 1. - Measures of endocarps from Roman age (Modena, Aquileia, Vercelli, Roma) and Mediaeval age (Imola, Moncalieri).

of Roman age are many metres below the present level of the town. In this scarce background the fact that one endocarp was found in a sediment core taken in the imperial harbour of Rome (Carlo Giraudi, personal communication) in the frame of its palaeoenvironmental reconstruction (Giardini *et al.* 2008) is worth to be mentioned.

*Privernum* (Latina, Southern Latium) surprisingly provided the oldest peach finds from the region of Rome. *Privernum* was a colony founded by Romans 70 kilometres south of Rome (Central Italy) in the 2<sup>nd</sup> cent. BC. Its name originates from the homonymous Volscian town first subdued and then destroyed by Romans during the 4<sup>th</sup> cent. BC (*Titus Livius, Ab urbe condita*). The colony benefited from its geographical favourable location, being located in a valley close to the Tyrrhenian coast and crossed by an ancient main road connecting ancient *Via Latina* and *Via Appia*. The economic welfare of *Privernum* was pointed out also by many rich houses of important citizens (Cancellieri 1998, 1999).

*Domus della Soglia nilotica* is a republican house built in the 1<sup>st</sup> cent. BC (Cancellieri 1998) and characterized by rich mosaic floorings and by an original plan centred on green areas. The euripus (a channel with water which constituted an ornamental element of the garden until the first decades of 1<sup>st</sup> cent. AD) was hidden during restoration works of the *domus*, and filled with waste material, in a period archaeologically dated at the second half of the 1<sup>st</sup> cent. AD. The radiocarbon date carried out on small charred wood fragments of a charred basket found in the filling of the small water basin, is consistent with the archaeological chronological framework (Gilberto Calderoni unpublished data). The leaves and wood remains as well as the seeds, fruits and pollen analyses of the basket and its content are still in progress (Sadori *et al.* 2006, 2007). The basket contained seeds and scales of *Pinus pinea* as well as *Prunus persica* stone fruits. Peach stone fruits are in low number (5 in all, two almost whole, three halves) and their size is surely underestimated because the endocarps are both not completely wholes and charred, and quite rounded (fig. 7).

Two almost entire endocarps are probably not enough to draw some conclusions. The middle/small size of the rounded stone fruits from *Privernum* is clear if compared with the biggest specimens from the Coliseum of Rome (table 1, second half of the 4<sup>th</sup> cent. AD, Follieri 1975; Celant 1998; Celant, this paper); their size is similar to the medium size of the almost contemporaneous endocarps (1<sup>st</sup> half of the 1<sup>st</sup> cent. AD - Bandini Mazzanti and Bosi, this paper) from *Mutina* (the present Modena), in northern Italy. The contemporary presence of peach stone fruits and stone pine seeds (Sadori, Giardini and Susanna, in preparation) induces to think that the charred basket containing them burnt in summer, as peaches are a seasonal fruit, mostly ripening

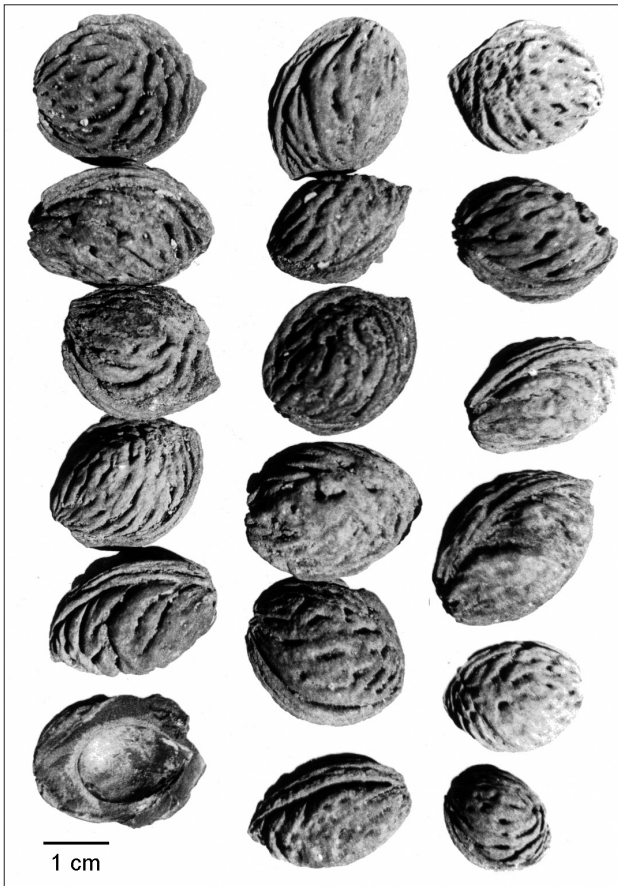


7. - *Prunus persica* charred endocarps (front, back, and lateral view) from Domus della Soglia Nilotica, *Privernum*, 2<sup>nd</sup> half of 1<sup>st</sup> cent. AD (photograph by Francesca Susanna).

in July and August, even if Pliny the elder mentioned both early and late seasoning varieties.

Among the archaeological sites of the Roman area, an especially famous context, the Coliseum, named Colosseum or *Amphitheatrum Flavium*, has provided precious information about the ancient dietary habits, enlightening the import business of edible plant *taxa* from the Near and Middle East to the central Mediterranean region, and confirming the literary tradition. The *Amphitheatrum Flavium* includes in its foundations a complex drainage system, formed by two wide sewers (the east and west ones) which have been sealed for hundreds of years after the last performances in the arena. A large number of uncharred waterlogged carpological remains belonging to *Prunus persica* (fig. 8) were found in the organic untouched drainage sediments, together with many other plant macroremains (e.g. *Pinus pinea*, *Juglans regia*, *Corylus avellana*, *Prunus avium*, *Olea europaea*, *Ficus carica*, *Vitis vinifera*, *Cucumis melo*, *Coriandrum sativum*, *Foeniculum vulgare*, *Pimpinella anisum*), presumably as the remnants of the food eaten on the steps by the Roman *spectatores* during *ludi circenses* (Follieri, 1975; Celant and Follieri 1992; Celant, 1998). The sediment of anthropogenic origin filling the western sewer has been dated by means of archaeological and radiometric analyses to the late imperial period (2<sup>nd</sup> half of 4<sup>th</sup> cent. AD) (Alessio *et al.* 1976).

From the morphobiometric point of view, peach stones found in the Colosseum are characterized by a heterogeneous morphology, showing a diversified silhouette, round to elongate, with a marked prevalence of round specimens. A number of stones show a sharply angled apex. The biometric data measures on 253 stones are reported in table 1. These data show that peach stones from the Colosseum are the biggest of the Roman period in Italy and indicate that the cultivation of this taxon, after its introduction documented by literary sources around the



8. - *Prunus persica* uncharred endocarps from Colosseum, Roma (photograph by Maria Follieri, modified).



9. - *Prunus persica* uncharred endocarps from the harbour of Neapolis, 4<sup>th</sup> cent. AD.

1<sup>st</sup> cent. AD, was regularly practiced in the 4<sup>th</sup> cent., when cultivars with large fruits had been selected. The contemporary presence of ovate and round stones of very different sizes suggests that during the late imperial time different varieties of peaches were cultivated. It is however possible that the different sizes of the peach stones reflected different gastronomical preparations, including both ripe fresh fruits and unripe green fruits preserved with complex cooking preparations, as reported in a cooking book (*De re coquinaria*) of 4<sup>th</sup> cent. AD erroneously ascribed to *Apicius* (e.g. peaches in cumin sauce - *Patina de Persicis: Persica duriora purgabis, frustratim concides, elixas, in patina compones, olei modicum superstillabis et cum cuminato infers; IV.160*).

The remnants of food from the Colosseum sewers, including peaches, cherries, grapes, figs and water melons, comprehend fruits that were ripe from early summer to autumn, testifying their seasonal consumption during *ludi circenses*.

### 3.4. Campania

Peach was present in the Vesuvian area in 79 AD, as indicated by a fresco from Herculaneum (fig. 1, Jashemski *et al.* 2002) and plant macroremains from *Pompeii* and *Herculaneum* (Jashemski 1979; Meyer

1988; Ciaraldi 2000, 2007; Borgongino 2006; Robinson 2002; Ciarallo 2004). Its scarce endocarps are still only partially investigated (Ciarallo, personal communication). As expected, peach is absent in the pre-Roman strata of Pompeii (Robinson 2002). The presence of peach endocarps and stalks found together with walnuts in a Roman dolium (vat), just lying on a stratum rich of plant and animal rests (possibly a drug preparation) of a farmhouse at Scafati (Pompeian country) would support the hypothesis of a medicinal preparation or a food conservation with peach fruits.

The discovery of part of the Roman harbour of *Neapolis* (Naples, Southern Italy, fig. 3) about 250 metres behind the present-day docks is recent. Historical sources (Capasso 1905) and archaeological findings (Giampaola *et al.* 2006) extensively documented the prosperity of the *Neapolis* harbour and the complexity of its trades. In the port area, three Roman shipwrecks (1<sup>st</sup>-3<sup>rd</sup> cent. AD) and a great amount of uncharred/waterlogged macroremains were found. The anaerobic conditions and the nature of the sediments allowed a good preservation of organic matter, giving the opportunity to study macroremains, wood of the shipwrecks and pollen too (Allevato *et al.* in press, Allevato *et al.* submitted). The entire sedimentary succession, about 6 metres thick, is almost continuous and well chronologically constrained by numerous archaeological artefacts, between the end of 4<sup>th</sup> cent. BC and the beginning of 5<sup>th</sup> cent. AD, when the site was definitively buried due to overfill (Giampaola *et al.* 2006; Amato *et al.* in press).

The botanical macroremains recovered on the palaeo-seafloors of the Roman harbour of Naples can be interpreted both as accidental falls of the good during



the loading/unloading harbour practices, and as food refuse. Some dozens of peach stones show a continuous presence between the beginning of the 1<sup>st</sup> and the 5<sup>th</sup> cent. AD. The greatest amount of peach remains falls in the second half of the 2<sup>nd</sup> cent. and at the beginning of the 3<sup>rd</sup> cent. AD. The fruit stones can be interpreted as the evidence of peach consumption in the harbour area. Morphometric comparison with medieval stones shows the greater size of the Roman stones (fig. 9), further comparison could allow the distribution and the history of peach variety to be delineated.

In the same area, on the northern slope of the Vesuvius volcano, archaeobotanical investigation was carried out in a Roman residential villa (Masseria De Carolis - Pollena Trocchia, fig. 3) dated to 2<sup>th</sup>-3<sup>rd</sup> cent. AD and buried by the AD 472 eruption, known as Pollena one. Only one charred peach stone fruit from a ritual offering in a burial archaeologically dated roughly to 450 AD (Di Pasquale, unpublished data) confirms the diffusion of this fruit in ancient Campania until the late Roman age.

#### 4. The cultivation of peach from Mediaeval times onwards

##### 4.1. Liguria, Lombardy, Piedmont, Veneto

During early Middle Ages, all the examined plant material comes from not waterlogged settlements (only one site was of wet environment), and no particular accumulation of remains was found.

At Monte Barro (fig. 10), the site of Gothic age (5<sup>th</sup>-6<sup>th</sup> cent. AD) near Lecco, in Lombardy (Castelletti and Castiglioni 1991; Castiglioni *et al.* 2001) peach was found both in the so-called “big building” (probably the barracks) and in the underlying the built-up area used by the families of the militaries and, in case of conflict, by the local populations. In the “big building”, within the foodstuff (mainly cereals) few fragments of peach stone fruits were found. Peach is anyway the third fruit in abundance, following chestnuts and walnuts. In the inhabited area, where the fruit remains are almost exclusive, peach is the second fruit (and the only fleshy one) after walnut, with about sixty remains, considering wholes and fragmented ones.

Few peach remains were found in the complex of Santa Giulia in Brescia (Castiglioni *et al.* 1999b), in the oldest period (450-569 AD) and even less numerous, in the following period (569-680 AD). One fragment is also from the Priamar (Savona, Liguria) monumental complex of 6<sup>th</sup> and 7<sup>th</sup> cent. AD (Cottini and Rottoli 2002). Relatively abundant remains of stone fruits were found at Nogara (Verona; Castiglioni and Rottoli in press) in the wet site of 9<sup>th</sup> and 10<sup>th</sup> cent. Here peach is the second remain in quantity after grapes.

The late Middle Ages sites from dry environments

preserved few peach remains. Sites of more recent ages, show more abundant plant macroremains, thanks to the good preservation conditions of waterlogged and mummified materials. Few remains were found in the castle of Manzano di Cherasco (Cuneo, 10<sup>th</sup>-12<sup>th</sup> cent.; Motella De Carlo 1996). Several finds of Renaissance age are from Venice, from latrines and garbage hips excavated at S. Marco cathedral and in the islands. The archaeological contexts are not always well dated (Rottoli 2000; Castiglioni and Rottoli unpublished).

The excavation of a kitchen drain from one of the towers of the Moncalieri castle, Savoy's family residence located near Turin, allowed the analyses of a series of materials heaped up in centuries, from 12<sup>th</sup> to 17<sup>th</sup> cent. (Castiglioni and Rottoli, unpublished). Dry peach woody endocarps (table 1) were mainly gathered from the superior stratigraphical unities ascribed to 15<sup>th</sup>-17<sup>th</sup> cent. The morphologic analysis was based on the criteria proposed by Guerriero (1962), and evidenced the presence of many peach cultivars, characterized by stone fruits showing macroscopic differences, even inside each unity. The quite low number of remains make impossible a precisely establishing of the present cultivars and to identify present varieties, or at least making hypotheses on the correspondence with them. This comparison is very difficult, also because a database based on endocarps morphology on the present-day peach cultivars is not available.

##### 4.2. Emilia Romagna

Today Emilia Romagna is one of the first three Italian regions for cultivation and production of peaches and nectarines (Fideghelli 2008), and it also has obtained in a large area the PGI (Protected Geographical Indication) for peaches and nectarines of Romagna (Della Casa 2008).

During the Middle Ages and Renaissance several authors from Emilia Romagna wrote about peach in their works. Pier de' Crescenzi (13<sup>th</sup>-14<sup>th</sup> cent. AD) described peach in his “*Liber commodorum ruralium*” and used some espalier planting as an internal wall in his ideal garden (Bellini and Nin 2008). Ulisse Aldrovandi, a natural scientist and botanist of the 16<sup>th</sup> cent. AD, included two tables about peaches such as nectarines and nut peaches in his “*Iconographia Plantarum*”, showing differences of the fruit in the different cultivars (Alessandrini and Ceregato 2007). References of 16<sup>th</sup> cent. AD report that peaches were present in Modena in gardens and, as for what happened for walnuts, were planted in greenhouses (Trenti 2008). Marco Bussato, in his work “*Giardino d'agricoltura*” talks about different fruit species of his period, such as peach (Burani 1988). Peach cultivation has also been discussed by the agronomist Vincenzo Tanari (Bellini and Nin 2008) in



10. - Italian Mediaeval-Renaissance and modern age sites with archaeological records of *Prunus persica*.

1. Moncalieri (Castiglioni and Rottoli, unpublished); 2. Cherasco (Motella and De Carlo 1996); 3. Savona (Cottini and Rottoli 2001); 4. Monte Barro (Castelletti and Castiglioni 1991; Castiglioni *et al.* 2001); 5. Brescia (Castiglioni *et al.* 1996b); 6. Nogara (Castiglioni, Rottoli, in press); 7. Venezia (Rottoli 2000); 8. Parma (Bandini Mazzanti, and Bosi 2007; Bandini Mazzanti and Bosi, unpublished data); 9. Ferrara (four sites: for details see table 2: Bosi 2000; Bandini Mazzanti and Bosi 2007; Bosi *et al.*, unpublished data; Bandini Mazzanti *et al.* 2005; Bandini Mazzanti *et al.* 1992; Bosi *et al.* 2006; Bosi *et al.*, in press 2); 10. S. Agata (Bosi *et al.*, in press 1); 11. Argenta (Bandini Mazzanti *et al.* 1999; Bandini Mazzanti, Bosi 2007); 12. Imola (Bandini Mazzanti *et al.*, unpublished data); 13. San Miniato (Di Pasquale *et al.*, unpublished); 14. Siena (two sites, Di Pasquale *et al.*, unpublished) and Chiusdino (Buonincontri *et al.* 2007); 15. Tarquinia (Clark *et al.* 1989).

	1. PARMA - Piazza Repubblica	2. S. AGATA (Bologna) - Nuova Geovis	3. IMOLA (Bologna) - Piazza Matteotti	4. FERRARA - corso Porta Reno/ via Vaspergolo			5. FERRARA - Piazza Castello	6. FERRARA - Giardino Duchesse	7. FERRARA - Piazza Municipale	8. ARGENTA (Ferrara) - via Vinarola/Alcotti		
<b>sites</b>												
<b>chronology</b>	10 <sup>th</sup> - 11 <sup>th</sup> (12 <sup>th</sup> )	10 <sup>th</sup> - 11 <sup>th</sup>	1400-1480	second half 10 <sup>th</sup>	first half 11 <sup>th</sup>	second half 11 <sup>th</sup> - first half 12 <sup>th</sup>	middle 14 <sup>th</sup> - end 15 <sup>th</sup>	end 13 <sup>th</sup> - beginn 15 <sup>th</sup>	1300 - 1385	15 <sup>th</sup>	second half 15 <sup>th</sup>	1275-1325
<b>n° of layers</b>	5	2	3	1	7	3	6	10	1	1	1	2
<b>deposit type</b>	waste pit	dug-out	well	layer	garbage heap filling, layer, waste pit, cesspit	waste pit, latrine (vat)	brickwork rubbish pit	waste pit	stone latrine	test layer	brickwork rubbish pit	ditch
<b>outdoor/indoor context (out/in)</b>	out	out	out	out (?)	out S in	out	in	out	in	out	in	out
<b>archaeological / archaeobotanical interpretation</b>	landfill of market place	village	centre town	uncultivated land with anthropic frequentation	suburban farmhouse with vegetable garden of peasants - artisans	reduction of crop fields (urbanization effect)	the Mirror Pit - house with a domestic rubbish pit of high class families	village with houses of middle class families	Este Court's Garden	the Ducal Pit - Este Court's rubbish pit		cultivated land
<b>sieved</b>	0,5	5	2,8	2	47	6	12	238,9	7	0,2	90	20
<b>References</b>	Bandini Mazzanti and Bosi, 2007; Bandini Mazzanti and Bosi, in press	Bosi et al., in press	Bandini Mazzanti et al., unpublished data	Bosi, 2000; Bandini Mazzanti and Bosi, 2007; Bosi et al., unpublished data			Bandini Mazzanti et al., 2005	Bandini Mazzanti et al., 1992	Bosi et al., 2006	Bosi et al., in press	Bandini Mazzanti et al., 1999; Bandini Mazzanti and Bosi, 2007	
<i>Prunus persica</i> (L.) Batsch. endocarps (no charred)	52	1	97	2	14	14	1	13	2	2	20	102

**Table 2.** - Synoptic chart of Mediaeval-Renaissance sites of Emilia Romagna with archaeological records of *Prunus persica*.

his great work of the 17<sup>th</sup> cent. AD called “*L’economia del cittadino in villa*”, and in the same period by Innocenzo Malvasia, a noble prelate, who wrote that he has seven different species of peach in his estate in Panzano, near Modena (Burani 1988). During the Middle Ages peaches were considered as an agreeable but unhealthy fruit. As all the fresh fruits, peaches were recommended at the beginning of meals; they were considered a light fruit, served as appetizer (Flandrin 2003a), but since 16<sup>th</sup>-17<sup>th</sup> cent. AD, peaches began to be served at the end of the dinner (Flandrin 2003b) and to be more appreciated. In Emilia Romagna attestation about it is available in the cookbook of Cristoforo da Messisbugo; of noble birth, he worked during the end of the 15<sup>th</sup> cent. and the first half of the 16<sup>th</sup> cent. as a *scalco* (a position combining housekeeper and chef) at the court of the Este family. The book was printed for the first time in Ferrara in 1548, the year in which its author died. This book contains more than two hundred recipes, with descriptions of the ingredients, and some details on dish presentation and etiquette (Bandini 1992). Peaches (or early peaches or “*alberges*”) are quoted in the list of the “ideal pantry”, in three cakes or stewed fruits recipes

(where peaches are also used unripe) and dishes of important banquets at the end of the dinner or as a season’s fruit or as “*persicata*”, a hard cake with lot of peaches and sugar (Bandini 1992), prepared today in several northern Italian regions (Picchi 2004). The “*persicata*” had been quoted in works on Modena of the 16<sup>th</sup> cent. AD (Trenti 2008), and also Giacomo Castelvetro (he was born in Modena) mentioned it. Castelvetro referred to several types of peaches that mature until mid October defining the fruit good, very delicate, but unhealthy. He wrote that peaches were usually eaten raw, peeled or scrubbed with a napkin, at times in wine: they were sometimes cooked in a wet paper under the ash or conserved entire with sugar (peaches in syrup, like nowadays preparations). Castelvetro wrote that women dried peaches cut in halves, preserving seeds and eating them during Lent time (Castelvetro 1614).

Till now peaches endocarps were found in eight archaeological sites of medieval and Renaissance ages from Emilia Romagna (table 2, fig. 10).

Since first measurements were carried out on finds from the dig of Imola (fig. 10), an interesting feature was observed: the average size of Middle Ages-Renaissance endocarps was very similar to the Roman ones from *Mutina* (table 1). To try to understand this fact, other features were considered (Morettini *et al.* 1962; Depypere *et al.* 2007) besides their standard measures<sup>1</sup>.

The results of the first morphobiometric analyses made on endocarps coming from Imola show (fig. 11) a large uniformity of finds in particular for shape, in size



**11.** - *Prunus persica* uncharred endocarps from Mediaeval Imola, 15<sup>th</sup> cent. AD.

(elongated endocarps prevail), in apical angle width (largest ones prevail) and in symmetry (symmetric forms prevail). These morphometric features induce to think that a unique cultural form was present in the 15<sup>th</sup> cent. AD site in Imola. For surface characteristics there are more differences but, as they are archaeobotanical finds (they are under time deterioration), plausibility of these characters should be better valuated at the end of the work. Work continues on other Middle Ages-Renaissance and Roman sites that have a good number of well preserved peach stone fruits (Bosi *et al.* work in progress).

#### 4.3. Latium and Tuscany

Considering Middle Ages, few peach endocarps were found in the macroremains assemblage from the latrine of Palazzo Vitelleschi, Tarquinia (Viterbo, Northern Latium, fig. 10) dated at 1390 AD (Clark *et al.* 1989). The find of only 5 peach stone fruits on 22634 seeds/fruits remains (mainly figs' achenes and vine pips) could be explained with the particular archaeological context.

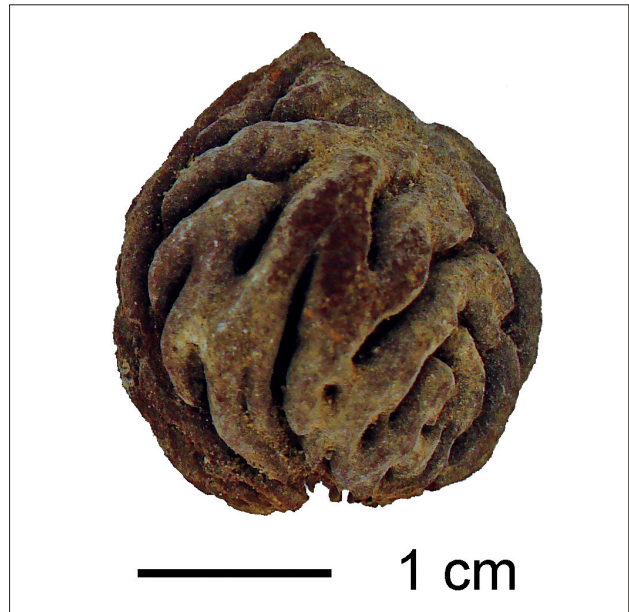
For the Middle Ages, data from Tuscany are available, both in town and rural areas. Ongoing analysis (Di Pasquale *et al.* unpublished data) on the San Genesio (San Miniato, Pisa, fig. 10) macroremains, dated at the 6<sup>th</sup>-7<sup>th</sup> centuries, testifies to peach use in the early period of the Middle Ages.

Archaeological excavations carried out in Siena show the common consumption of this fruit at the end of the Middle Ages. Several uncharred stones were found in the Carmine convent (14<sup>th</sup> cent.) within the filling material of a vault, and in the Santa Maria della Scala "Spedale" (fig. 10, 14<sup>th</sup>-15<sup>th</sup> cent.). In northern Tuscany, few peach stones (fig. 12) dated at the 11<sup>th</sup>-12<sup>th</sup> cent. were found in the church of San Genesio (San Miniato, Pisa). In rural areas, in the castle of Miranduolo (Chiusdino, Siena), some charred fruit stones come from several structures for foodstuff storage located in the lord family house (Buonincontri *et al.* 2007). These data suggest that peach consumption, between the 9<sup>th</sup> and the 12<sup>th</sup> cent., was reserved to the leading social class. The Miranduolo castle botanical remains show that during the early Middle Ages the use and cultivation of peach trees was common even far from the towns.

## 5. Discussion and conclusions

The historical and archaeobotanical records of peach evidences that it was introduced in Italy, namely the centre of the Roman empire, in the first half of the 1<sup>st</sup> cent. AD.

The oldest artistic representation of this fruit is in a



12. - *Prunus persica* uncharred endocarp from Santa Maria della Scala "Spedale", Siena, 14<sup>th</sup> cent. AD.

fresco (fig. 1) from the Casa dei cervi of Herculaneum, which was sealed by the notorious Vesuvius eruption of 79 AD. Peaches are neither represented in an *Ara Pacis* (Rome) festoon (fig. 2), as the resemblance of the pome with a peach is due to an artefact carried out during a restoration intervention, nor in *Villa di Livia* (Rome).

The historical sources (Pliny the Elder, Columella, Martial) refer to peach as *mala persica*, *duracina*, since the second half of 1<sup>st</sup> cent. AD, providing an age of its introduction into Italy (Pliny the Elder) that could be restricted to the last decade of the first half of the 1<sup>st</sup> cent. AD.

The Italian archaeobotanical record of Roman age appears to be rather inhomogeneous, with surprisingly scarce finds from Rome and central Italy, few finds from the southern regions, and abundant ones from the northern ones. Peach macroremains consist always of fruit stones, either charred or uncharred. Only once, in a dolium from a *villa rustica* (farmhouse) of Pompeii country (Ciaraldi 2000) the woody endocarps were found together with their stalks.

The archaeological contexts are various, ranging from living to funerary ones. Funerary/votive offerings have been found in burials of different kind and geographical location (e.g. Angera: Castelletti 1985; Manerbio: Castiglioni and Rottoli, this paper; Como: Castiglioni and Rottoli 2006; Modena: Marchesini and Marvelli 2007; Pollena Trocchia: Di Pasquale, this paper), dated from the early 1<sup>st</sup> cent. to 476 AD. Between the living contexts, a wide spectrum of them is available, as peach endocarps were found in the Imperial Age harbours of Rome (*Portus*, Giardini *et al.* 2008, and unpublished) Naples (*Neapolis*, Allevato *et*

al. in press), and Aquileia (*Aquileja*, Castelletti 1973-74, table 1), in housing contexts such as rich domus or farms (e.g. *Privernum*: Sadori et al., 2007; *Pompeii*: Ciaraldi 2007), drainage channels of the town (*Mutina*: Bandini Mazzanti and Taroni 1988), and in a public building such as the Coliseum of Rome (Follieri 1975; Celant 1998).

The oldest finds (first decades of 1<sup>st</sup> cent. AD) are from northern Italy, from both a town context (Modena) and two necropolis ones (Angera, Manerbio) and probably from Naples harbour. These finds would antedate peach introduction in Italy at least of one decade, with reference to the date inferable from Pliny *Naturalis Historia*. Either if we suppose that peach was imported as seed or as small plant then grafted on other local rosaceans, obtaining fructifying trees should have anyway taken some years.

Another aspect worth to be mentioned is the high diversity degree of the endocarps (table 1) found in *Mutina* since the first years of introduction of this fruit into Italy; this variability is even higher during the late empire in Rome (Colosseum: Celant, this paper and unpublished data), where the biggest stone fruits were found with very small ones. Abundant finds from the mediaeval site of Imola confirm the use and the diffusion of this fruit also in the following centuries, with a wide variety of endocarp types, showing a slightly smaller size of the Roman ones. Sparse finds are from Medieval/Renaissance sites (generally found in high social level contexts) from the northern and central Italian peninsula (e.g. the Este Court of Ferrara), while we ignore the existence of contemporary records from southern and insular Italy.

Peach should have been imported into Italy through maritime ways (even if the possibility of an introduction from Greece through the Balkans could be possible as well) and probably quite soon from the centre towards the central-northern empire provinces (Bakels and Jacomet 2003), while again a maritime route can be imagined for the introduction of peach into *Hiberia*, *Lusitania* and *Gallia*.

The fact that Emilia Romagna region was crossed by *Via Emilia*, an important route towards the northern empire provinces, could possibly explain the real abundant finds from the region. Peach continues to be appreciated in Italy also at the end of the Roman Empire and during Middle ages, while it disappear from central Europe since 250 AD (Bakels and Jacomet 2003), probably suggesting it was transported by ancient Romans into northern countries, with no chance to be locally cultivated.

As a matter of fact Rome, in the centre of the Roman Empire, does not record early finds of peach, probably also for the scarce attention paid by classical archaeologists to plant remains. This particular sensitivity

is apparently higher in northern Italian regions, unless the geographical distribution of the archaeobotanical finds mirrors a real situation and therefore richer social conditions achieved by the inhabitants of the northern Italian peninsula.

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A special gratitude to all the archaeologists which collected and made available the botanical macroremains from Italian excavations. A complaint remains for all the organic material that was probably not considered worth to be analysed.

## Notes

<sup>1</sup> Following the quoted authors, characters taken into consideration were:

1. endocarp form: - four types of endocarp can be evidenced using the diametric reports: flat- length/width <1.00 and length/thickness <1.00; globose - length/width = 1.00-1.15 and length/thickness <1.50; enlarged - length/width = 1.00<1.15 and length/thickness > 1.50; elongated - length/width > 1.15 and length /thickness 1.15); - four angle apexes of endocarp can be measured: narrow (< 80°), medium (80°-90°), large (90°-100°), very large (> 100°); -endocarps can be sorted in symmetric (S) and asymmetric (AS).

2. endocarp surface, indicating relief density (surface less, on average or very gathered), relief aspect (smooth or wrinkled) and crest width (tight, on average, large).

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