# RAC IN ROME

Atti della 12a Roman Archaeology Conference (2016): le sessioni di Roma

estratic

# R A C 2016 O M B a cura di Maria Teresa D'Alessio e Chiara Maria Marchetti

# **Edizioni Quasar**









The Roman Society

Il volume è stato pubblicato con il contributo del Dipartimento di Scienze dell'Antichità della Sapienza Università di Roma

© 2020 Autori e Edizioni Quasar di S. Tognon srl

ISBN 978-88-5491-062-1

Edizioni Quasar di S. Tognon srl via Ajaccio 41-43, I-00198 Roma tel. 0685358444, fax 0685833591 email: qn@edizioniquasar.it www.edizioniquasar.it





# RAC IN ROME

Atti della 12a Roman Archaeology Conference (2016): le sessioni di Roma

a cura di

Maria Teresa D'Alessio e Chiara Maria Marchetti

Edizioni Quasar



# **SOMMARIO**



## INTRODUZIONI

Giorgio Piras	9
Christopher Smith	11
Kristian Göransson	13
Maria Teresa D'Alessio, Chiara Maria Marchetti	15

# CONTRIBUTI

Paolo Liverani, <i>Il Tevere, i ponti e l'Annona</i>	19
Francesca de Caprariis, <i>Cosa fare della</i> Forma Urbis	29

## Sessione I GEOLOGIA, IDROGRAFIA, MORFOLOGIA: ELEMENTI DETERMINANTI PER LA NASCITA DEI CENTRI URBANI

Pier Luigi Dall'Aglio, Luisa Migliorati

Pier Luigi Dall'Aglio, Luisa Migliorati, Introduzione alla sessione. Geologia, idrografia, morfologia: elementi determinanti per la nascita dei centri urbani	37
Stefania Quilici Gigli, Quae arxesset: <i>il caso della "nascita" di</i> Norba, <i>tra condizionamenti naturali e strategie politiche</i>	41
Guido Rosada, Dialoghi antichi tra paesaggio e insediamenti. Note di morfologie urbane nelle terre del sorgere del sole (Anatolia)	49
Pier Luigi Dall'Aglio, Città e corsi d'acqua. Alcune considerazioni sulle città romane delle Marche settentrionali	61
Kevin Ferrari, Influenza della geografia fisica nelle scelte insediative: il caso di Minturnae	75
Gianluca Mete, Cremona, una città lungo il fiume: considerazioni sulla topografia urbana, il fiume e il porto in età romana	85
Vincenzo Amato, Raffaella Bonaudo, Amedeo Rossi, La città e il suo fiume nella Campania an- tica: condizionamenti geomorfologici e adattamenti urbanistici delle città romane lungo la valle del Clanis	95

### Sessione II OGGETTI, AVVENIMENTI E STORIA Paolo Carafa

Christopher Smith, Introduzione alla sessione. Who invented early Rome?	111
Paolo Carafa, Integrare e narrare monumenti e paesaggi antichi	115

Alexandre Grandazzi, URBS : du mot à la chose. Nouvelles réflexions à propos de Varron, de lingua Latina, 5, 143	129
Cristiano Viglietti, The social role of things in archaic Rome. Archaeology, social history, and economic anthropology	143
Marco Arizza, Le XII Tavole a Roma, riduzione dei corredi funerari a Veio. Tradizione letteraria ed evidenza archeologica a confronto	151

CS IT AILO

#### Sessione III

# ROMA: I PALAZZI DEL POTERE TRA LA METÀ DEL I E LA METÀ DEL II SECOLO D.C. NUOVE RICERCHE

Mirella Serlorenzi, Fulvio Coletti

161
163
173
183
195

# Sessione IV

#### ROME AND THE MEDITERRANEAN: ARTEFACTS, GOODS, TRADE

North Africa: Territories, Centers of Production and Trade in Ancient Mediterranean Clementina Panella, Michel Bonifay

Youcef Aibeche, Muftah Ahmed Alhaddad, Sami Ben Tahar, Michel Bonifay, Clementina Pa- nella, Introduzione alla sessione. North Africa: Territories, Centres of Production and Trade in Ancient Mediterranean: an Introduction	213
REGIONS AND PRODUCTION SYSTEM: MAURETANIA/NUMIDIA	
Youcef Aibeche, La circulation commerciale dans la Numidie et la Maurétanie césarienne	215
Touatia Amraoui, Productions littorales de Maurétanie césarienne et de Numidie. État de la recherche et nouvelles réflexions sur les rèseaux d'échanges	219
Alejandro Quevedo, Dynamiques commerciales en Maurétanie césarienne. Quelques réfléxions sur les données de la céramique	229

# REGIONS AND PRODUCTION SYSTEM: AFRICA PROCONSULARIS

Sami Ben Tahar, La céramique africaine à la lumière des dernières recherches archéologiques et	
archéométriques: bilan	239
Jihen Nacef, Réfléxion sur la production de la céramique antique du Sahel tunisien	255



# MARKETS, ECONOMIES: ROME/NAPLES

Antonio F. Ferrandes, Anfore africane a Roma tra età repubblicana e età augustea. L'avvio delle importazioni	263
Alessia Contino, Africana antica e Dressel 26 dal Nuovo Mercato Testaccio	281
Elena Gabriella Lorenzetti, Pendici settentrionali del Palatino: i dati sulle anfore di produzione africana da quattro contesti ceramici databili tra l'età augustea e l'età claudia	289
Priamo Antonio Manna, Un drenaggio con anfore nel territorio lateranense	295
Marco Ricci, Merci africane da scavi recenti della Crypta Balbi: contesti di età antonina e tardo- antica	305
Marta Casalini, Tra IV e VI secolo: un bilancio problematico	311
Claudio Capelli, Viviana Cardarelli, Osservazioni archeologiche e petrografiche integrate sulla sigillata africana decorata a stampo dalle pendici nord-orientali del Palatino	325
Pina Franco, North Africa and Portus through the Amphora. Quantifying Trade Relationships .	339
Franca Del Vecchio, Approvvigionamenti di prodotti africani a Neapolis	347

# MARKETS, ECONOMIES: THE MEDITERRANEAN

Giuseppe Cacciaguerra, La ceramica africana nella Sicilia orientale: nuovi dati da Siracusa e Megara Hyblaea	361
Adolfo Fernández Fernández, Comercio africano tardoantiguo en el noroeste de la península ibérica	371
George Koutsouflakis, Converging to the eastern markets: Roman North African amphorae in the Aegean	383
Brikena Shkodra-Rrugia, African Red Slip wares from Apollonia (Albania)	399
Victoria Leitch, Roman North African cookwares as indicators of economic growth and decli- ne	411
Clementina Panella, Michel Bonifay, Conclusioni/Conclusions	417
Elenco degli Autori	441





# NORTH AFRICA AND PORTUS THROUGH THE AMPHORA. QUANTIFYING TRADE RELATIONSHIPS

Pina Franco

Keywords: Portus, Ostia, Rome, trade, annona, Tripolitanian amphorae, Africana 1, Keay 25, Sullecthum, Tarhuna, Lepcis Magna, Tripoli

#### Abstract:

This paper focuses on some important results from the study of North African amphorae from Portus. It firstly defines the main periods of commercial activity of the port of Imperial Rome and its relationship to the original harbour of Ostia. It emphasises the importance of the Severan Tripolitana 3 amphora at the site and also of the Keay 25 and Keay 25-26 as the last vessels to reach the port on a large scale. In addition, it quantifies the importance of different Tunisian and Tripolitanian production centres in supplying Portus through a method based on Peacock's approach to archaeological ceramics. It is the first time that North African workshops are distinguished through fabrics and typology at a consumption site such as Portus.

Portus was the 'other' port of Rome. It was an artificial port built 3km to the north of Ostia by AD 46 by the emperor Claudius, and it was subsequently enlarged by Trajan in the second decade of the 2<sup>nd</sup> century AD, in order to accommodate growing trade and secure food supply to the people of Rome<sup>1</sup> (fig. 1). The recent excavations at the site were started in 2007 by the University of Southampton, in collaboration with the British School at Rome, the Soprintendenza Speciale per i Beni Archeologici di Roma and the University of Cambridge, under the main direction of Prof. Simon Keay. The excavations focused on the area of the 'Palazzo Imperiale', which is located between the two basins: the 'Porto di Claudio', and the 'Porto di Traiano', the hexagonal shaped basin. Since the start of the project in 2007, the ceramic evidence has challenged traditional views of the port, as well as adding new information on the port site itself, and on trading relationships between Rome and ports across the Mediterranean in antiquity. In particular, it was felt that *Portus* was mainly built to receive food supplies from Egypt and other parts of the eastern Mediterranean. This hypothesis was based on documentary evidence, notably a letter written in AD 173 by the traders of Tyre, in which they complained about the loss of importance of *Puteoli* (modern Pozzuoli) as a port due to the diverting of the important granary ships from Alexandria to Ostia-Portus<sup>2</sup>. In fact, the excavations at Portus have revealed the dominance of North African material at the site, with east Mediterranean imports in smaller quantities. While final guantification of all of the pottery from four years of excavation (2007-2008-2009 and 2011) is moving towards its completion, the importance of North Africa to Portus and Rome, in particular Tripolitania under the reign of Septimius Severus, and the role played by this emperor towards the annona to Rome, has now been documented by the archaeological evidence<sup>3</sup>.

The amphora data presented here formed part of a doctoral thesis on the African amphorae<sup>4</sup>. More specifically, the materials taken into account are those from the excavations from 2007 to 2009 (the core material of the PhD) and 2011<sup>5</sup>.

The aim of this paper is to present a preliminary statement of some important results from this study. These include evidence of a clear commercial dominance at the port of North African amphorae, and the particular importance of the Severan 'Tripolitana 3 amphora', which has been documented on a

<sup>1.</sup> Keay *et alii* 2005, p. 1, Keay, Paroli 2011, p. 11.

<sup>2.</sup> Meiggs 1973, p. 60.

<sup>3.</sup> The Tripolitanian amphorae from *Portus* testifies to the *Historia Augusta* (*s*, 18, 3) informing us on the care of the emperor *Septimius Severus* in providing Rome with free Tripolitanian olive oil, a task carried out also by *Alexander Severus*. PANELLA 1973, pp. 570-571 who also mentions other sources on the matter of Tripolitanian olive oil to Rome. MANACORDA 1976-1977, pp. 555-563, MANACORDA 1977, p. 156.

<sup>4.</sup> FRANCO 2012.

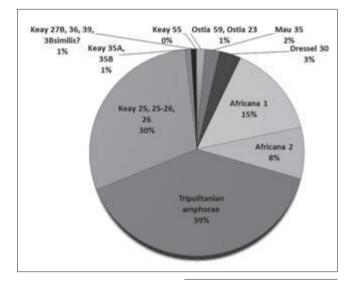
<sup>5.</sup> The doctoral thesis included a small sample from the 'Portus Duca Area' and did not include the amphorae excavated in 2011.

much greater scale than at the neighbouring port of Ostia. Another achievement of this study was a first attempt at the quantification of material from Tunisian and Tripolitanian workshops at a consumption site, such as Portus, through a methodology taking into account the correlation of fabric, typology and ceramic variables, such as technological features, including firing conditions. Such a methodology is built on Peacock's method for the visual characterization of inclusions<sup>6</sup>, combined with ceramic petrology<sup>7</sup>, which carefully considers the strict correlation of vessel type to fabric from a given workshop, a correlation supported by petrography<sup>8</sup>.

The North African amphora assemblage includes 595 rim fragments, 668 handles, 357 bases, and 207 'diagnostic body sherds', the latter being mainly broken fragments of large single vessels, all accounting for 1335 vessels. Rims, handles and bases accounted for 1273 different vessels, and the diagnostic body sherds for 62 vessels<sup>9</sup>.

The analysis of the North African amphorae from *Portus* reveals a very clear trend. They date mainly from the end of the 2<sup>nd</sup> century AD and the beginning of the 3<sup>rd</sup> century AD to the mid 5<sup>th</sup> century, with very little material dating to the 6<sup>th</sup> century (fig. 2)<sup>10</sup>. Additionally, the amphorae represent a uniform range of materials, and fall within a well-established typology11; very few examples have no comparative evidence, and these are dated mainly to the 5<sup>th</sup> century. The Africana 1, Africana 2 and in particular the Tripolitanian amphorae and the Keay 25 amphora series, are the most attested at the site. Within the Tripolitanian amphorae, the greatest proportion is classified as TripolitaN Lido di Ostia 0 8km

estratio



na 3 (fig. 3). Also, the data shows a clear decline of African goods in the mid 5<sup>th</sup> century AD. No examples of Keay 62 and Keay 61 have been excavated at the site and the amphora data indicates that the Keay 25 and Keay 26 (spatheion type 1) were the last mass-produced amphorae to reach *Portus*.

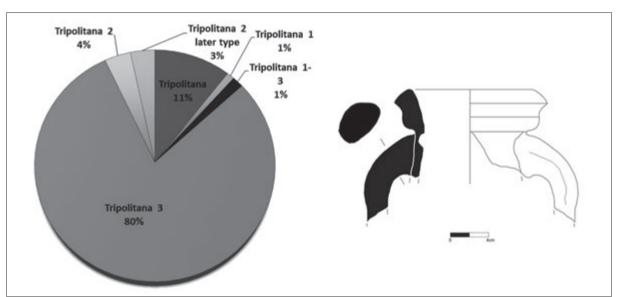
The Tripolitanian amphorae, together with the Africana 1A, were excavated mainly from two contexts: 1024 and 3122; dump-deposits of soil

- 7. РЕАСОСК 1984.
- 8. BONIFAY 2004; for example Capelli, Ben Lazreg, Bonifay 2006.
- 9. The methodology is illustrated in FRANCO 2012, chapter 4.
- 10. The pie chart illustrates only the most traded amphorae at Portus to ease visualization of what occurred at the port.
- 11. Panella 1973; Manacorda 1977; Keay 1984; Bonifay 2004.

**Fig. 1.** Location of *Portus* (KEAY *et alii* 2005, p. 273).

**Fig. 2.** Share of N. African amphorae from *Portus* (986 N. of vessels).

<sup>6.</sup> Реасоск 1977.



**Fig. 3.** Share of Tripolitanian amphorae from *Portus* (385 N. of vessels).

and pottery sherds used as hard core for filling depressions to provide level surfaces for the construction of a *ludus* and adjacent quayside. The

'Tripolitane' from the two contexts have been dated to the beginning of the 3<sup>rd</sup> century AD. Beside the association with the Africana 1A, context 1024 included a bowl of Hayes 9A form<sup>12</sup>. In addition, contexts 1024 and 3122 contain examples of amphorae classified as Tripolitana 1-3 because of the clear distinction between neck, vessel body, and handles just below the rim, or their smaller size. In particular, consideration of the pattern of breakage of the amphorae from context 3122: sherds coming from the same vessel (according to the fabric-type method), indicates that the dumping of soil and ceramic material was an intentional action, which occurred at the beginning of the Severan period. By comparing the data from Portus with data from neighbouring Ostia, differences between the sites can be identified and they may help us to better understand commercial relationships between these two ports. The share of olive oil amphorae from the 'Area NE of the Terme del Nuotatore' at Ostia, dated from 140 to 189/190 AD13 shows a larger proportion of Ostia 59 and Ostia 23 and a smaller proportion of Tripolitanian 1, 2 and 3. Rizzo's more recent study of North African amphorae from the 'Area NE of the Terme del Nuotatore' dated to 160-180/90 AD (Period 5) shows a very similar pattern, with a large majority of Ostia 59 and Ostia 23 amphorae and a much smaller sample of Tripolitanian and Africana 1A amphorae<sup>14</sup>. Also, African amphorae from 'Strato I Ambiente 16 of the Terme del Nuotatore' dated to the 230-250 AD, show a higher proportion of Tunisian vessels over the Tripolitanian amphorae<sup>15</sup> (fig. 4). Such comparisons seem to suggest that Ostia retained its commercial importance up to the 2<sup>nd</sup> century AD, and that the share of Tripolitanian amphorae at Ostia represented what was actually consumed there. By accommodating the increased trade of Tripolitanian amphorae, Portus developed its own commercial characteristics by the end of the 2<sup>nd</sup> century AD.

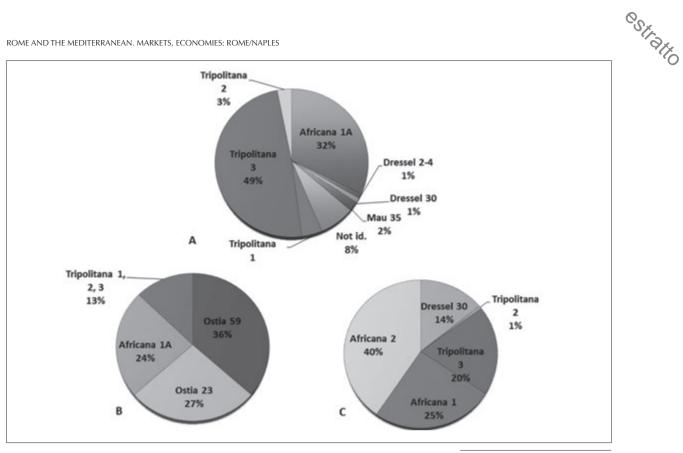
Analysis of the fabrics in order to quantify the shares of different North African workshops at a consumption site was one of the main objectives of the doctoral research (**fig. 5**). Thus, within the Tunisian amphorae, the workshops of *Sullecthum* were differentiated from those of *Leptiminus* and from 'unknown' workshops. The *Sullecthum* fabric is characteristic because it is often fired to produce red and grey colours or otherwise can be reddish throughout, while it is rather rough to the touch. It is also noted for its fine limestone inclusions and for its wide occurrence on the Africana 1<sup>16</sup>. The *Leptiminus* 

- 13. PANELLA 1983.
- 14. Rizzo 2014, p. 279, tabella 38, p. 284, tabella 39.
- 15. Manacorda 1977.
- 16. Fabrics are discussed in FRANCO 2012, chapter 6.

estratto

<sup>12.</sup> Zampini 2011, p. 93.

ROME AND THE MEDITERRANEAN MARKETS ECONOMIES: ROME/NAPLES



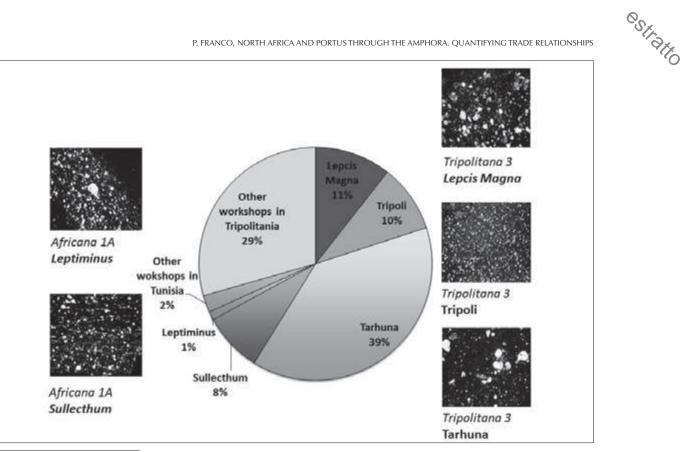
fabric tends to be buff in colour with a light peach core and creamy external edges; a white skin is present on the external surfaces. Beside limestone, it shows quartz grains, the coarser of which (0.5mm and >0.5mm) tend to be very rounded in shape. Within the Tripolitanian amphorae, five major fabric groups were differentiated from 'unknown' workshops, and associated with five major production centres. It was noted that a correlation existed between sherds of Tripolitanian amphorae of similar fabric and Tripolitanian amphorae with inscriptions (one vessel), stamps (three vessels) and graffiti (one vessel). This correlation emphasized the Fig. 4. Pie chart showing -A. Share of N. African amphorae from context 1024 dated to the beginning of the 3rd century AD (96 N. of vessels) - B. Share of N. African amphorae from the 'Area NE Terme del Nuotatore' (383 rims) (PANELLA 1983) - C. Share of N. African amphorae from 'Ambiente XVI Terme del Nuotatore' (148 rims) (MANACORDA 1977, pp. 129-131, 250).

importance of a production area within *Tripolitania*. The so-called Tripolitania Group 1 (TripG1) and Tripolitania Group 2 (TripG2) represent fabrics associated with vessels with epigraphy at Portus. In hand specimens, they are both characterized by the very fine nature of the quartz (not visible at x20 power magnification), fine and white rounded lumps of limestone, and very fine metasediments/ argillaceous inclusions, generally elongated in shape, reddish or black in colour, poorly sorted, and which are very hard to scratch with metal. It shows fired colours that are not so strong and bright, and very often it presents a darker line in the core or along the edges. It is very hard fired and it is rather difficult to sample a fracture.

The two fabric groups have been separated only because of the fired clay being extremely compact in TripG2. Petrologically, the main features of the fabric are the presence of very fine quartz grains, metasediments, and the rare occurrence of characteristic lenses of silt. The origins of these two fabrics have been suggested to be in the fertile region of Tarhuna in the Gebel of Tripolitania on the basis of; consideration of a correlation of fabric to vessels with epigraphy at Portus; rims with similar fabric from the Tarhuna area were illustrated in a recent doctoral thesis<sup>17</sup>; similar Neo-Punic symbols from two of the amphorae from Portus find comparative evidence on epigraphy from masonry blocks of oilery villas in the Tarhuna area; for example those from the 'large farm-villa' at Sidi Eysawi<sup>18</sup>.

<sup>17.</sup> AHMED 2010, p. 255, amphora Tel 102.

<sup>18.</sup> AHMED 2010, p. 145. drawings of amphorae from Portus with similar neo-punic symbols are illustrated in FRANCO 2012, pp. 323-324.



**Fig. 5.** Share of the suppliers of olive oil amphorae to *Portus* from context 3122 (85 N. of vessels).

Tripolitania Group 6 (TripG6) is characterized by the same type of inclusions as TripG1 and TripG2, but these are on a coarser scale. Petrologically, the fabric shows abundant very fine background quartz against which

there is a smaller proportion of coarser sub-rounded and rounded quartz, and by the occurrence of lenses of silt. This has been assigned to the same production area as the previous two fabrics: Tarhuna. Tripolitania Group 3 (TripG3) is a fabric produced in the *Lecpis Magna* area and is characterized by the coarseness of its inclusions, quartz and limestone, and by dark red and dark brown fired colours, conferring to it a characteristic sandwich effect<sup>19</sup>. Tripolitania Group 5 (TripG5) is instead light-brown beige in colour, with a smooth powdery feel to the touch, and it is softer fired. It is fine grained, and it may contain greyish material identified as shell fragments. A similar fabric characterizes the Mau 35 vessel that was noticed in the Tripoli area<sup>20</sup>. By quantifying fabrics from context 3122, the largest proportion of vessels was manufactured by the so-called 'major suppliers' in Tripolitania, and from *Sullecthum* in central Tunisia (fig. 5). These vessels, which are the outcome of standardised production, as it the case of Africana 1, where there is a clear association between fabric and vessel type, and of major suppliers in Tripolitania, may indicate a degree of coordination over production.

In conclusion, the results from the study show a clear picture of the main period of commercial activity between North Africa and Portus, which lasted for about 250-300 years. By acting as a major destination for North African trade at the end of the 2<sup>nd</sup> century AD and beginning 3<sup>rd</sup> century, *Portus* defined a major aspect of its commercial character. In this context, its major trading partners were *Sullecthum* in Tunisia (Africana 1A) and the producers located in the fertile region of Tarhuna, *Lepcis Magna* and Tripoli. Later, the amphorae Keay 25 and the spatheion type 1 represent the last vessels to be traded at *Portus* on a large scale.

It is to be stressed that these results are based on a sample of amphora sherds from a small excavated portion of the overall area of *Portus*. However, having said this, other excavations at *Portus* have also revealed a change occurring in the mid to later 5<sup>th</sup> century AD, including the abandonment of ware-



houses<sup>21</sup>, and the construction of defensive walls<sup>22</sup>. Such developments can very likely be related to historical events, such as the Vandal conquest of Africa in AD 439 and the sack of Rome by the Vandals in AD 455. The first meant that the traditional channels of trade and the supply of foodstuffs to Rome changed<sup>23</sup>, while the second may have played a role in the disappearance of African products from the Roman market. Besides this, further consideration is needed on the nature of the formation of the excavated deposits, to better understand, for example, the large presence of Tripolitanian amphorae at *Portus*. One explanation advanced was that the shape and size of the vessel itself made it difficult to be transported along the Tiber to Rome, and that olive oil was decanted into different kinds of container at the port. Also, a comparison of the fabrics and vessel epigraphy of the Tripolitanian and Africana 1 amphorae from *Portus* and Monte Testaccio<sup>24</sup> will further our understanding of the nature of North African trade towards Rome.

#### Bibliography

344

AHMED 2010 = AHMED M., Rural settlement and economic activity: olive oil and amphorae production on the Tarhuna plateau during the Roman period. PhD thesis-Leicester, 2010. Unpublished. Accessibile in http://hdl.handle. net/2381/8752'.

BONIFAY 2004 = BONIFAY M., Etudes sur la céramique romaine tardive d'Afrique, Oxford 2004.

CAPELLI, BEN LAZREG, BONIFAY 2006 = CAPELLI C., BEN LAZREG N., BONIFAY M., Nuove prospettive nelle ricerche archeometriche sulle ceramiche nordafricane: l'esempio dell'atelier di Sullecthum-Salakta (Tunisia centrale), in CUCUZZA N., MEDRI M. (eds.), Archeologie: Studi in onore di Tiziano Mannoni, Bari 2006, pp. 291-294.

COCCIA 1993 = COCCIA S., Il 'Portus Romae' *fra tarda antichità ed alto medioevo*, in PAROLI L., DELOGU D. (a cura di), *La storia economica di Roma nell'alto medioevo alla luce dei recenti scavi archeologici*, Firenze 1993, pp. 183-188.

Coccia 1996 = Coccia S., Il 'Portus Romae' alla fine dell'antichità nel quadro del sistema di approvvigionamento della città di Roma, in Gallina Zevi A., Claridge A. (eds.), Roman Ostia Revisited. Archaeological and Historical Papers in Memory of Russell Meiggs, London 1996, pp. 297-307.

FRANCO 2012 = FRANCO P., African Amphorae from Portus. PhD thesis - Southampton, 2012. Unpublished. Accessibile in https://eprints.soton.ac.uk/362725/.

KEAY 1984 = KEAY S., Late Roman Amphorae in the Western Mediterranean. A typology and economic study: the Catalan evidence, Oxford 1984.

KEAY *et alii* 2005 = KEAY S., MILLETT M., PAROLI L., STRUTT K., An archaeological survey of the port of Imperial Rome, London 2005.

KEAY, PAROLI 2011 = KEAY S., PAROLI L., Introduction, in KEAY S., PAROLI L. (eds.), Portus and his hinterland, London 2011, pp. 1-19.

MANACORDA 1977 = MANACORDA D., Le anfore, in CARANDINI A., PANELLA C. (a cura di), Ostia IV. Le Terme del Nuotatore. Scavo dell'Ambiente XVI e dell'Area XXV, in StMiscRo 23, Roma 1977, pp. 117-285.

MANACORDA 1976-1977 = MANACORDA D., Testimonianze sulla produzione e consumo dell'olio tripolitano nel III secolo, in DialA 9-10, 1976-1977, pp. 542-601.

MEIGGS 1973 = MEIGGS R., Roman Ostia, Oxford 1973.

PANELLA 1973 = Anfore, in CARANDINI A., PANELLA C. (a cura di), Ostia III. Le Terme del Nuotatore. Scavo degli ambienti III, VI, VII. Scavo dell'ambiente V e di un saggio nell'area SO, in StMiscRo 21, Roma 1973, pp. 463-633.

PANELLA 1983 = PANELLA C., I contenitori oleari presenti ad Ostia in età antonina: analisi tipologica, epigrafica, quantitativa, in Blázquez Martínez J.M., Remesal Rodríguez J. (eds.), Producción y comercio del aceite en la Antigüedad II, Madrid 1983, pp. 225-261.

PANELLA 1993 = PANELLA C., Merci e scambi nel Mediterraneo tardoantico, in CARANDINI A., CRACCO RUGGINI L., GIARDINA A. (a cura di), Storia di Roma. L'età tardoantica. I luoghi e le culture, Torino 1993, pp. 613-697.

PANELLA 1999 = PANELLA C., *Rifornimenti urbani e cultura materiale tra Aureliano e Alarico*, in HARRIS W.V. (a cura di), *The Transformations of the Urbs Roma in Late Antiquity*, Portsmouth (RI) 1999, pp. 183-215.

- 21. Coccia 1993; Coccia 1996.
- 22. PAROLI, RICCI 2011.
- 23. Keay 1984; Panella 1993, Panella 1999, Panella et alii 2010.
- 24. REVILLA CALVO 2007.

estratto

PANELLA et alii 2010 = PANELLA C., SAGUÌ L., CASALINI M., COLETTI F., Contesti tardoantichi di Roma. Una rilettura alla luce dei nuovi dati, in MENCHELLI S., SANTORO S., PASQUINUCCI M., GUIDUCCI G. (eds.), *LRCW3. Late Roman coarse wares. Cooking wares and amphorae in the Mediterranean*, Oxford 2010, pp. 57-78.

PAROLI, RICCI 2011 = PAROLI L., RICCI G., Scavi presso l'Antemurale di Porto, in KEAY S., PAROLI L. (eds.), Portus and its Hinterland, London 2011, pp. 127-146.

PEACOCK 1977 = PEACOCK D.P.S., Ceramics in Roman and Medieval archaeology, in PEACOCK D.P.S. (ed.), Pottery and early commerce: Characterization and trade in Roman and later Ceramics, London 1977, pp. 21-33.

PEACOCK 1984 = PEACOCK D.P.S., Petrology and Origins, in FULFORD M., PEACOCK D.P.S. (ed.) Excavations at Carthage: the British Mission I.2, the Avenue du Président Habib Bourguiba, Salambo: the Pottery and other Ceramic Objects from the site, Sheffield 1984, pp. 6-28.

RIZZO 2014 = RIZZO G., Le anfore, Ostia e i commerci mediterranei, in PANELLA C., RIZZO G., Ostia VI. Le Terme del Nuotatore, in StMiscRo 38, Roma 2014, pp. 79-151.

REVILLA CALVO 2007 = REVILLA CALVO V., Les amphores africaines du II et III siècle du Monte Testaccio (Rome), in MRABET A., REMESAL RODRÍGUEZ J. (eds.), In Africa et in Hispania: études sur l'huile africaine, Barcelona 2007, pp. 269-298.

ZAMPINI 2011 = ZAMPINI S., La ceramica dello scavo del 2007 nel Palazzo Imperiale di Portus, in KEAY S., PAROLI L. (eds.) Portus and its Hinterland, London 2011, pp. 93-99.

