
AMPHORAE EX AEGYSSO. FRAGMENTS FROM OLDER EXCAVATIONS

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Abstract: This paper presents a sample of early and late Roman amphorae fragments discovered during several excavations performed at Aegyssus–Tulcea-Colnicul Hora in the 1959-1996 period, with the purpose of bringing a small contribution to the study of the economic history of the Roman Empire. The sample consists of 458 fragments.

Typologically, 17 amphora types were identified, some of which have different versions: Dressel 43, Dressel 2-5, Dressel 24, Zeest 72, Zeest 94 (Šelov B and C), Berenice Middle Roman Amphora 5, Kapitän II, Agora M273, Kuzmanov XV-XVI, Spatheion, Opaïť D II, Opaïť D III, Opaïť E I – c, Carthage Late Roman Amphora 1, Carthage Late Roman Amphora 2, Carthage Late Roman Amphora 3 and Carthage Late Roman Amphora 4. Furthermore, out of these 17 types, it was determined, based on macroscopic fabric comparison, that 5 types were of Aegean origin, 3 types from the Eastern Mediterranean Coast, 7 types of Black Sea origin, one type from North Africa, while the LRA 1 and even LRA 2 types were produced in various centres in the Eastern part of the Empire.

Chronologically, 5 types were distributed during the Early Roman Period, 10 types during the Late Roman Period and 2 types have been traced to the period between the 3rd and 4th century AD.

Last but not least, the paper also proposes a method of calculating quantities of imported wine and olive oil during the two time periods of the Roman Empire.

Rezumat: Articolul prezintă un eșantion de fragmente de amfore romane timpurii și târzii provenite din săpăturile efectuate sporadic la Aegyssus–Tulcea-Colnicul Hora în perioada 1959-1996, cu scopul de a aduce o contribuție la studiul istoriei economice a Imperiului Roman. Eșantionul cuprinde 458 de fragmente tipice.

Au fost identificate 17 tipuri, unele dintre acestea fiind reprezentate prin mai multe variante: Dressel 43, Dressel 2-5, Dressel 24, Zeest 72, Zeest 94 (Šelov B și C), Berenice Middle Roman Amphora 5, Kapitän II, Agora M273, Kuzmanov XV-XVI, Spatheion, Opaïť D II, Opaïť D III, Opaïť E I – c, Carthage Late Roman Amphora 1, Carthage Late Roman Amphora 2, Carthage Late Roman Amphora 3 and Carthage Late Roman Amphora 4. În plus, pe baza unei analize macroscopice sumare s-a putut determina că 5 tipuri provin din spațiul egeean, 3 tipuri de pe coasta Mediteranei Orientale, 7 din bazinul Mării Negre, 1 tip din Africa de Nord, în timp ce fragmente de LRA 1 și LRA 2 prezintă caracteristici de pastă regăsite în diferite centre din părțile orientale ale Imperiului.

Din punct de vedere cronologic, 5 tipuri au circulat în perioada timpurie a Imperiului Roman, 10 tipuri în perioada târzie, iar 2 tipuri au fost încadrate în perioada sec. III-IV p.Chr.

Nu în ultimul rând, articolul propune o metodă de calcul a volumelor de vin de import și ulei de măsline consumate în cele două perioade ale Imperiului roman la Aegyssus.

Keywords: Aegyssus, amphorae, olive oil, wine, Roman economy, ceramics.

Cuvinte cheie: Aegyssus, amfore, ulei de măsline, vin, economie romană, ceramică.

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INTRODUCTION

Considering the fact that during the last century the research emphasis was mostly on fortifications, buildings or graves with rich inventories and less on analysing the bulk of the material found during the excavations, at the present time we find ourselves having a significant amount of unpublished material, sometimes decades old. This study is part of an initiative that aims to "rediscover" artefacts, hidden and abandoned in various museum storage spaces, analysing a specific category: wine and oil transport amphorae unearthed during excavations at the ancient *Aegyssus*-Tulcea, Colnicul Hora site (Fig. 1 and Fig. 2).

The archaeological digs that yielded the material presented in this paper were conducted at first by G. Simion, but a more careful excavation plan was made during the 1970s by V.H. Baumann, A. Opaïț, M. Mănuclu-Adameșteanu, Gh. Mănuclu-Adameșteanu and last but not least, the late I. Vasiliu¹ (Fig. 3).

This approach to studying the economic history of the Roman Empire by means of analysing a certain ceramic category aims to further the understanding of the subject and also to fill gaps in the broader picture of the economic dynamic between Roman provinces alongside other sources available to the historian, namely epigraphy and numismatics. Part of Hellenistic and Roman archaeology, the amphorae category is now much better understood.

At my request and with the support of several senior researchers at the History Museum of Tulcea², I have chosen to analyze several amphorae fragments from the excavations performed at *Aegyssus* during 1959 and 1996. The renewed interest for research at *Aegyssus* is partly due to the Tulcea Municipality, which decided to finance excavations since 2015, hence the need to update the status of artefacts from earlier excavations and prepare for future material. Furthermore, due to the fact that this was also part of the subject of my bachelor's thesis, the study conducted does not involve all of the material found in the museum's storage. After preliminary sorting, only typical and/or rare fragments have been chosen, opting to rule out sherds that are too small or that cannot be attributed to one type or another. The result was a sample of 458 amphorae fragments attributed to 17 types.

METHODOLOGY

The current state of research determines us to utilize the typological criterion, alongside the chronological and functional ones, in order to organize out catalogue.

¹ For more details see Lungu 1996, 50, footnote 6. Furthermore, for a more recent study concerning the site's future prospects see Păffgen *et alii* 2017.

² I wish to thank those who encouraged me and offered much needed support, namely Florin Topoleanu, Dorel Paraschiv, George Nuțu, Marian Mocanu and Sorin-Cristian Ailincăi.

With the intention of making this study as comprehensible and useful as possible to a larger audience, we opted for the use of *Munsell Soil Color Charts*, revised edition of 1994 for the description of colour, clay and temper.

Due to the somewhat inadequate conditions of collecting ceramic fragments, inputting information about the stratigraphic context and ultimately depositing the material in storage, further data correlation cannot be done. By this we mean that we cannot identify certain fragments in certain strata or closed complexes, if there were any, as shown on the map (Fig. 1).

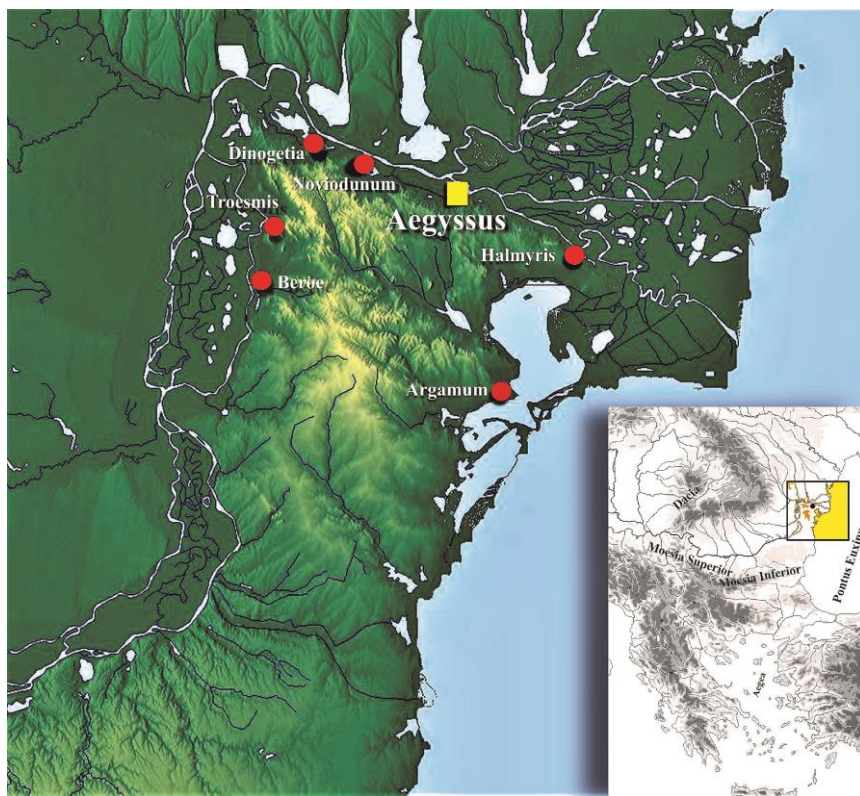


Fig. 1. Map showing Roman cities in Northern Dobruja (according to Mocanu, Nuțu 2017).

We have chosen to make use of statistical knowledge in order to better understand wine and oil import and consumption by the local populace, not because of fondness of numbers. The formula for maximum estimated consumption equals the number of typical fragments (bases, handles and necks that do not seem to correspond to the same pot) multiplied by the average volume for that amphora type (even sub-type when necessary), based on analogies. This formula is to be considered a prototype and

is very much dependent on the state of research in an archaeological site, mainly the proportion of ceramic fragments collected. In the case of *Aegyssus*, the sample of 458 amphorae fragments (about $\frac{1}{4}$ out of the total fragment count in storage) is to be considered statistically representative.



Fig. 2. Aerial photograph with excavated sectors (according to Mocanu, Nuțu 2017).

CATALOGUE AND IDENTIFIED TYPES

The sample consist of fragments identified as being part of the following types: Dressel³ 43, Dressel 2-5, Dressel 24, Zeest⁴ 72, Zeest 94 (or Šelov⁵ B and C), Berenice Middle Roman Amphora⁶ 5, Kapitän⁷ II, Agora⁸ M273, Kuzmanov⁹ XV-XVI,

³ Dressel 1879, 36-112, 143-196.

⁴ Sazanov 2012, 326-353.

⁵ Šelov 1986, 395-400.

⁶ Riley 1979, 188-189.

⁷ Riley 1979, 189-193; Robinson 1959, 69, pl. 15.

⁸ Robinson 1959, 109, pl. 29; Opațiț 2014, 441-450.

⁹ Paraschiv 2006, 35-38.

Spatheion¹⁰, Opaït¹¹ D II, Opaït D III, Opaït E I – subtype c, Carthage Late Roman Amphora¹² 1, Carthage Late Roman Amphora 2, Carthage Late Roman Amphora 3, and Carthage Late Roman Amphora 4, respectively.

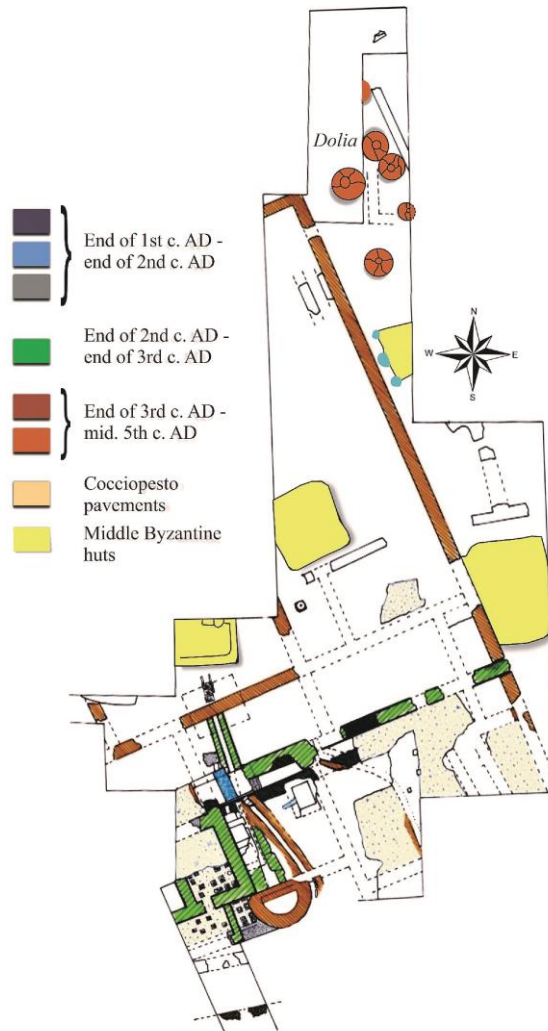


Fig. 3. Layout of the Roman Baths sector, main archaeological unit excavated up to the present (according to Mocanu, Nuțu 2017).

¹⁰ Paraschiv 2006, 133-135.

¹¹ Opaït 2004, 29-31.

¹² Fulford, Peacock 1994, 119-123.

Dressel 43

Widely spread throughout the entire roman world, from Britain to Northern Africa and from the Pontus region to Gaul, this type of wine amphora circulated from the end of the 1st century BC to the first half of the 3rd AD. Due to several form variations and clay types used, a single production centre is not viable, but we can safely assume multiple kiln sites are located in the Aegean Sea. General characteristics include an outside-rounded rim, a long and cylindrical neck, elongated body, handles that supersede the rim, have a particular "spur" on the upper part and are round in cross section. The amphora ends in a somewhat narrowed or conical base. Capacity varies from 5 litres to 20 litres¹³. At *Aegyssus* we have identified a single upper handle fragment with the characteristic "spur".

- 1) AEG76/00001¹⁴. Upper handle fragment with a very fine fabric, Munsell 10R 8/3 pink colour, evenly burned, fine inclusions and same-colour slip-wash. Measurements¹⁵: dt=2.10 cm; h=13.50 cm. Context: Aeg '76, sq. XIX, -1.65 m (Fig. 4/1).

Dressel 2-5 oriental/Pseudo-Koan

Based on the double-barrelled handled amphora made on the island of Kos, beginning with the 3rd century BC, this amphora type has slightly different proportions for Eastern and Western Roman variants. More recently, kiln sites have been found in the southern Black Sea basin as well. The proposed chronology for this type of wine amphora is between the end of the 1st century BC and 3rd century AD. General characteristics include double-barrelled handles, a large, rounded rim, a cylindrical neck fixed on a fusiform body which ends in a conical base. Estimated average volume is 30 litres. At *Aegyssus* we have identified 32 typical fragments (18 handle fragments, 7 neck and rim fragments, 3 base fragments and 4 lower body fragments), of which 2 were drawn, both having clay characteristics that correspond to Black Sea origins¹⁶.

- 2) AEG76/00014. Neck, rim with an incomplete double-barrelled handle fragment with a fine fabric, Munsell 2.5YR 8/4 pink colour, fine inclusions, unevenly fired handle and Munsell 5YR 8/4 pink colour slip-wash. Measurements: dg=11.00 cm; dt=2.300 cm; h=13.00 cm. Context: Aeg '76, S1, sq. 3, -2.70 m (Fig. 4/2).

¹³ Paraschiv 2006, 81-82; Sciallano, Sibella 1991, 94.

¹⁴ Temporary inventory number chosen for this particular research.

¹⁵ The abbreviations are as following: dt=handle cross-section diameter; h=height; dg=whole rim diameter; df=base diameter; gp=wall thickness; gb=rim thickness; di=internal neck diameter; l=length.

¹⁶ Paraschiv 2006, 78-80.

- 3) AEG76/00015. Conical base fragment with fabric characteristics of the previous item, fine inclusions, evenly fired, with sign of corrosion of some type and no trace of slip-wash. Measurements: $df=2.90$ cm; $h=9.50$ cm. Context: Aeg '76, *passim* (Fig. 4/3).

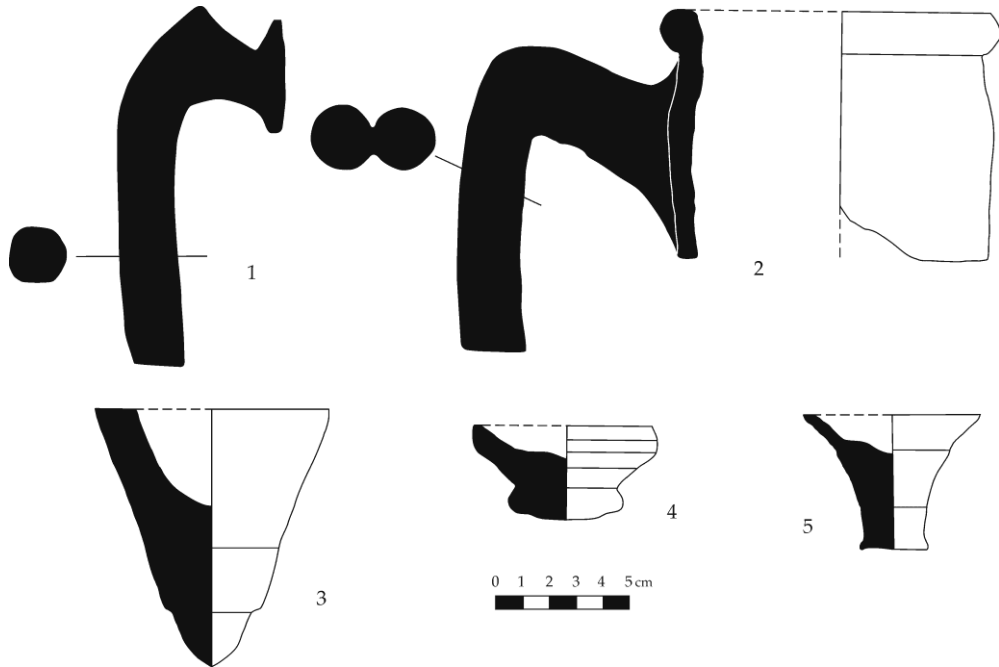


Fig. 4

Dressel 24/ Similis

Olive oil amphora on which the Late Roman 2 will be based on, this type (along with its Similis variant) played an important part in the oil supply of the Eastern and Pontic provinces. Starting in the Hellenistic period, production of this type continues until the beginning of the 3rd century AD, as shown by research conducted around Chios-Erythrai-Kyme¹⁷. General characteristics include a wide, funnel-shaped rim, conical neck, a pear-shaped body that ends in a conical base. Based on the cross-section of the handles and the colour of the clay, we can determine if it's a Classic Dressel 24 or a Similis one. The volume of this type varies from 56 to 94 litres¹⁸. At *Aegysus* we identified 18 typical Similis fragments (3 base fragments, 4 rim fragments, 3 body fragments and 8 lower and upped handles with body fragments) of which one base fragment was drawn.

¹⁷ Opaït, Tsaravopoulos 2011, 275-323.

¹⁸ Opaït, Paraschiv 2013, 319; Paraschiv 2006, 17-19.

- 4) AEG75/00019. Conical base fragment with a fine fabric, Munsell 2.5YR 6/6 light red colour, very fine inclusions, evenly fired and Munsell 7.5YR 8/4 pink colour slip-wash. Measurements: h=5.00 cm; df=2.60 cm. Context: Aeg '75, S1 2a, -1.30-1.50 m (Fig. 4/5).

Zeest 72

A wine amphora type of significant size (averaging 70 litres in capacity), the Zeest 72 has an oval-shaped and ridged body which ends in a button-shaped base, also having a conical neck and a wide, rounded rim. It is commonly found in the northern Pontic region, hence the name „mirmekian type”¹⁹. Recent studies propose the dating between the middle of the 3rd century and middle of the 4th century AD²⁰, formerly being between the end of the 2nd century and the first half of the 3rd century AD. At *Aegyssus* we have identified and drawn a base fragment with a button-shaped end, corresponding to an earlier stage in the development of this type.

- 5) AEG76/00017. Base fragment with a semi-fine fabric, Munsell 10R 7/6 light red colour, medium to coarse inclusions, evenly fired and Munsell 5Y 8/1 white colour slip-wash, visible only inside the ridges. Measurements: df=4.20 cm; gp=1.00 cm. Context: Aeg '76, *passim* (Fig. 4/4).

Zeest 64-94/ Šelov B și C

The Heracleian narrow-necked type was rather widespread in the Pontic basin from the 1st century to the 4th century AD, being closely related to the establishment of roman veteran colonies in the southern Pontus. General characteristics include a slender, conical body, a long, narrow neck ending with a short, sometimes rounded rim, with the handles having a distinct ridge along the middle, while being oval in cross-section and lastly, a conical base. Later variants²¹ tend to shorten and become more rounded, with a ridged body and having less capacity²² (from about 6 litres to as little as 2 litres). At *Aegyssus* we have identified no less than 69 fragments (32 handle fragments, 8 base fragments and 29 body, neck and rim fragments) belonging to different subtypes, of which 2 base and 4 neck and rim fragments were drawn.

- 6) AEG76/00006. Conical base fragment with a fine fabric, Munsell 10YR 8/3 very pale brown colour, fine inclusions, evenly burned and same-colour slip-wash. Measurements: df=6.80 cm; h=11.00 cm; gp=1.00 cm. Context: Aeg '76, sq XX-XXI, -1.20 m (Fig. 5/1).
- 7) AEG76/00008. Neck, rim and handle fragment with similar fabric characteristics to item no. 4). Measurements: dt=5.40 × 2.30 cm; dg=7.50 cm; h=23.00 cm. Context: Aeg '76, M5d, -1.40 m (Fig. 5/2).

¹⁹ Paraschiv 2006, 26.

²⁰ Sazanov 2012, 326-353.

²¹ Vnukov 2016, 36-47.

²² Opaïț 2004, 31-32, Paraschiv 2006, 19-24.

- 8) AEG76/00011. Neck, rim and handle fragment with similar fabric characteristics to previous items. Measurements: dt=4.80 × 2.50 cm; dg=7.00 cm; h=8.00 cm. Context: Aeg '76, M1, *passim* (Fig. 5/3).
- 9) AEG76/00010. Conical base fragment with similar fabric characteristics to previous items. Measurements: df=6,9 cm; h=7,4 cm. Context: Aeg '76, sq. XVII (Fig. 5/4).
- 10) AEG76/00009. Neck, rim and handle fragment with similar fabric characteristics to previous items. Measurements: gp=1.10 cm; dg=8.40 cm; h=14.00 cm. Context: Aeg '76, *passim* (Fig. 5/5).
- 11) AEG76/00007. Neck, rim and handle fragment with similar fabric characteristics to previous items, except for a Munsell 10R 8/4 pink colour slip-wash. Measurements: dg=6.60 cm; gp=1.10 cm; h=14.00 cm. Context: Aeg '76, sq. XIII-XIV (Fig. 5/6).

Berenice Mid Roman Amphora 5/ Zeest 80

A sizeable olive oil amphora (between 50 and 100 litres in capacity), the MRA 5 has a pear-shaped body, a medium to long neck ending in a wide, two-ridged rim, large ridged handles and a massive, conical base. So far, two variants seem to have been identified, one circulating from the 3rd to the 4th century AD and being of Aegean origin, while the other circulating from the 4th to the 6th century AD and being of Pontic origin²³. At *Aegyssus* we have identified a single rim fragment belonging to the earlier variant.

- 12) AEG79/00003. Rim fragment with a fine fabric, Munsell 2.5YR 4/7 red colour, fine inclusions, evenly fired and Munsell 5YR 6/6 reddish yellow colour slip-wash. Measurements: dg=11.60 cm; h=5.60 cm. Context: Aeg '79, S1, *passim* (Fig. 6/1).

Kapitän II/ Berenice Mid Roman Amphora 7

This wine amphora with Aegean origins, most probably from Chios based on representations on a series of Late Hellenistic coins, has a significant impact on the Mediterranean and Pontic trade between the start of the 2nd century and the half of the 4th century AD, being found in two variants. General characteristics include a conical ridged neck with a prominently ridged straight rim, a conical body, over-the-rim grooved handles which are oval in cross-section and a conical, hollow base²⁴. At *Aegyssus* we have identified 6 fragments, of which only one neck, rim and handle fragment, corresponding to the later variant (end of the 3rd century AD), was drawn.

- 13) AEG78/00018. Cylindrical base fragment, restored in the laboratory, with a fine fabric, Munsell 10R 5/8 red colour, very fine inclusions, evenly fired and a Munsell 2.5YR 3/6 dark red colour slip-wash. Measurements: df=6.60 cm; gp=0.90 cm; h=6.20 cm. Context: Aeg '78, N4c, N4. (Fig. 6/2).

²³ Opaït 2004, 26; Paraschiv 2006, 86-87; Riley 1979, 188-189.

²⁴ Opaït 2004, 26; Paraschiv 2006, 87-89; Riley 1979, 189-193.

- 14) AEG83/00012. Neck and handle fragment with similar fabric characteristics to previous item. Measurements: dg=6.00 cm; h=8.00 cm; dt=2.60 × 3.80 cm. Context: Aeg '83, S1, sq. 3-4, N IX.(Fig. 6/4).

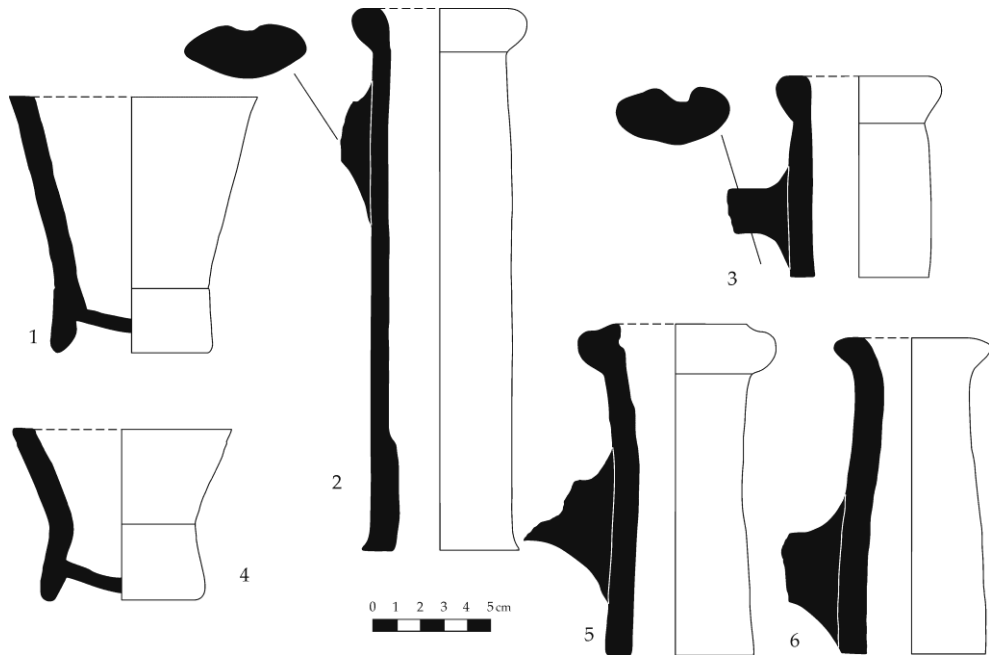


Fig. 5.

Carthage Late Roman Amphora 3

Proposed as a later variant of the Berenice MRA 3 type, the Carthage LRA 3 maintains the somewhat elongated ridged body and short, narrow neck and rim. Initially having a single handle, starting with the end of the 4th century AD it receives a second handle and in the 6th century the base turns into a conical shaped, hollow button. The clay seems rather remarkable, being similar to that of the clay found in Eastern Sigillata B²⁵, hence the idea that they have a common clay source, if not the same point of origin. Due to the average volume for this type of amphora being 10-12 litres, wine is the most probable content, although organic residue analysis also indicated *garum* and fats, such as scented oils and the like, a common presumption since the origins of this type of amphora are Western Asia Minor and even Egypt²⁶. At *Aegyssus* we have identified 11 fragments, of which two base fragments and one restored rim were drawn, all three corresponding to the later variant.

²⁵ Riley 1979, 184-185.

²⁶ Opaïț 2004, 13-14; Paraschiv 2006, 84-86; Peacock 1984, 120-121.

- 15) AEG75/00021. Base fragment with a fine fabric, Munsell 2.5YR 5/6 red colour, very fine inclusions of white mica, evenly fired and same-colour slip-wash. Measurements: df=4.70 cm; gp=0.55 cm; h=6.50 cm. Context: Aeg '75, S2, -1.50 m (Fig. 10/1).
- 16) AEG79/00022. Conical base fragment with a fine fabric, Munsell 2.5YR 6/8 light red colour, very fine inclusions of white mica, evenly fired and same-colour slip-wash. Measurements: df=3.33 cm; gp=0.35 cm; h=3.65 cm. Context: Aeg '79, S1, *passim* (Fig. 10/2).
- 17) AEG75/00025. Rim fragment, restored in the laboratory, with a fine fabric, Munsell 2.5YR 5/6 red colour, very fine inclusions of white mica, evenly fired and same-colour slip-wash. Measurements: dg=5.20 cm; gp=0.70 cm; h=1.90 cm. Context: Aeg '75, *passim* (Fig. 10/3).

Kuzmanov XV/XVI

Two late roman amphora types commonly found between the 5th and 7th centuries AD in the Pontic and Lower Danube regions, they have a common clay source, general appearance, but differ in regard of volume, hence the reason we opted to put the fragments together, since we did not have large enough typical fragments, except for the one presented here. The first type has an elongated body which ends in a conical or cylindrical button, while the second has a more oval shaped body and a flat base²⁷. Due to the small capacity, wine is the most probable content. At *Aegyssus* we have identified 42 fragments from both types, of which only one base fragment belonging to the XV variant was aptly drawn.

- 18) AEG80/00005. Cylindrical, ridged base fragment, partially restored in the laboratory, with a semi-fine fabric, Munsell 10R 5/8 red colour, fine inclusions, evenly fired and same-colour slip-wash. Measurements: gp=1.10 cm; df=4.70 cm; h=16.00 cm. Context: Aeg '80, M2a, N3, room b (Fig. 6/5).

Agora M273

Also known as the „baggy-shaped amphora“, the Agora M273 first published by Robinson²⁸ is a common find in the Mediterranean and Pontic basins during the Late Roman period. Starting in the 2nd century AD, the production of this amphora type can be traced to several kiln sites across the Oriental Mediterranean, based on its clay variety. Its shape changes slowly until the 6th century, when it's irregular, ovoid-shaped, with ridges, a short neck, ending with a small button²⁹. At *Aegyssus* we have identified 8 base fragments, of which only one fragment with a conical button was drawn.

- 19) AEG74/00013. Tronconical base fragment with a fine fabric, Munsell 2.5YR 7/8 light red colour, very fine inclusions, evenly fired and Munsell 7.5YR 8/4 pink colour slip-wash. Measurements: df= 1.60 cm; gp=0.60 cm; h= 4.30 cm. Context: Aeg '74, sq. 2-3 (Fig. 6/3).

²⁷ Opaïț 2004, 28-29; Paraschiv 2006, 35-38.

²⁸ Robinson 1959.

²⁹ Opaïț 2014, 441-450; Paraschiv 2006, 103-104.

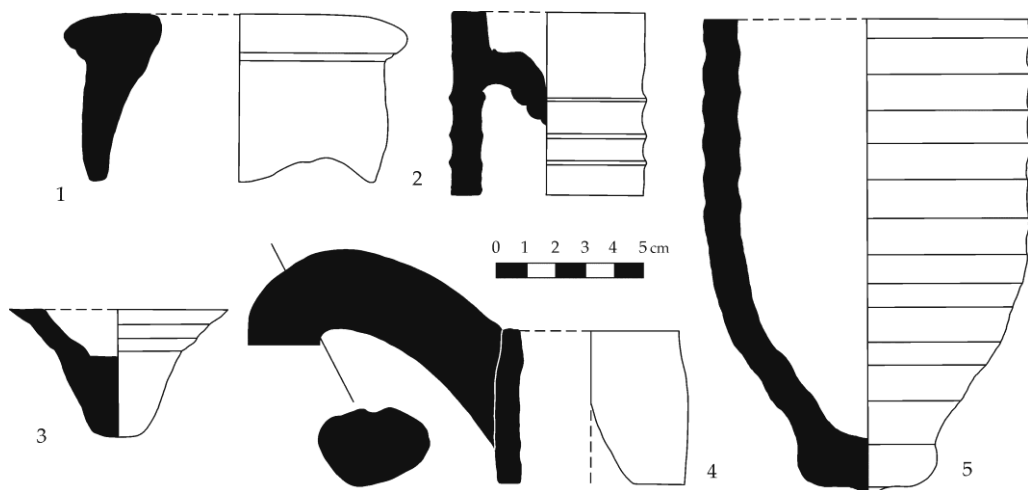


Fig. 6.

Carthage Late Roman Amphora 2

One cannot help but notice the fact that this Late Roman amphora type has its origins in the Dressel 24 type, being initially manufactured in the Aegean basin. From the end of the 4th century until the 7th century AD, several kiln sites in the Eastern Mediterranean and even in the Pontic basin produced this type, such amphorae being found in numerous cities across the Roman Empire. Although one can observe there were several different clays used, general characteristics include a globular body with small, closely-knit ridges in the upper area, a short conical neck which end with a widened rim, handles being oval in cross-section and a base that ends in different button-like structures. Its volume varies from 30 litres to 64 litres. The contents are surprisingly varied, most often being olive oil, but there have been found traces of resins, wine, grain and even iron nails³⁰. At *Aegyssus* we have identified 132 fragments, of which 2 rim fragments, one body fragment with a *dipinto*, one complete handle and one base fragment with a hemispherical button.

- 20) AEG75/00023. Rim fragment with a fine fabric, Munsell 2.5YR 7/8 light red colour, fine inclusions, evenly fired and same-colour slip-wash. Measurements: dg= 12.00 cm aprox.; gb=1.80 cm; gp=1.10 cm; h=6.70 cm. Context: Aeg '75, S2 4a, -1.50 m (Fig. 9/1).
- 21) AEG75/00024. Body and handle fragment with a fine fabric, Munsell 2.5YR 6/6 light red colour, fine inclusions, evenly fired and Munsell 10YR 6/6 brownish yellow colour slip-wash. Measurements: gp=1.00 cm; dt=4.70 × 2.20 cm; h=16,5 cm. Context: Aeg '75, S2 4a, sq. 11-12, -1.50 m (Fig. 9/2).

³⁰ Opaiț 2004, 10-12; Paraschiv 2006, 92-95; Peacock 1984, 119-120; For iron nails see Rădulescu 1973, 197-198.

- 22) AEG75/00026. Body fragment with a semi-fine fabric, Munsell 2.5YR 6/6 light red colour, medium inclusions, evenly fired, a Munsell 10YR 7/3 very pale brown colour slip-wash and slight traces of a *dipinto* made with a red paint. Measurements: gp=1.00 cm; l=12.60 cm; h=12.00 cm. Context: Aeg '75, S3 3a (Fig. 9/3).
- 23) AEG76/00027. Rim fragment with a fine fabric, Munsell 10YR 7/4 very pale brown colour, fine inclusions, evenly fired and same-colour slip-wash. Measurements: dg=14.00 cm approx.; gb=2.20 cm; gp=1.10 cm. Context: Aeg '76, S2 M5d/N2, -1.30 m (Fig. 9/4).
- 24) AEG76/00028. Base fragment with a fine fabric, Munsell 2.5YR 5/8 red colour, fine inclusions, evenly fired and 10YR 6/4 light yellowish-brown colour slip-wash. Measurements: gp=0.70 cm; df=3.80 cm; h=3.30 cm. Context: Aeg '76, M4, *passim* (Fig. 9/5).

Opaiț D-II

Most probably of Pontic origin, this wine amphora type has an oval-shaped body with deep ridges and a short, cylindrical neck, giving the impression it is an imitation of the LRA 1, although smaller in capacity (averaging 6,5 litres)³¹. Based on the rare finds of this type we can infer it circulated between the 4th century and the second half of the 5th century AD. At *Aegysus* we have identified a single neck and rim fragment.

- 25) AEG74/00002. Rim fragment with a fine fabric, Munsell 10R 5/8 red colour, very fine inclusions, evenly fired and Munsell 2.5YR 5/8 red colour slip-wash. Measurements: dg=4.20 cm; gp=0.50 cm; h=5.60 cm. Context: Aeg '74, sq. X N-E, -0.80 m (Fig. 7/1).

Opaiț E-I, sub-type c)

This certain sub-type is described by A. Opaiț as having a conical body, a conical neck and a narrow rim with a slight ridge under. Most probably of Sinopean origin based on the clay features³², it is dated between the 4th and 5th centuries AD, being used for wine transportation. At *Aegysus* we have identified a single neck, handle and rim fragment.

- 26) NRINV 17075³³. Neck, rim and handle fragment with a fine fabric, Munsell 2.5YR 6/8 light red colour, fine inclusions, evenly fired and Munsell 10YR 8/3 very pale brown colour slip-wash. Measurements: dg=7.50 cm; gp=0.90 cm; h= 13.60 cm. Context: Aeg '78, M3c, P6, N III (Fig. 7/2).

³¹ Opaiț 2004, 29.

³² Opaiț 2004, 31.

³³ Already having an inventory number suggests that this particular fragment was previously looked upon, even published, although no records could be found at the Museum of History and Archaeology in Tulcea. A. Opaiț (Opaiț 2004, 31), when describing the E I c) subtype mentions an earlier article (Opaiț 1991, 218, pl. 24/3), in which he states that this amphora was found "only at Topraichioi and Aegysus". There is a drawing of a possible similar fragment, but without further information we cannot be certain. I apologize if this aforementioned fragment and the one in the current catalogue are one and the same.

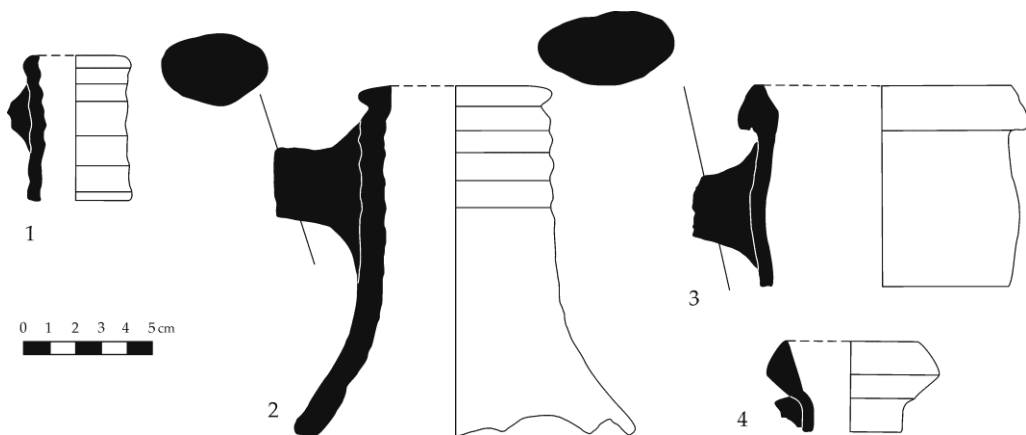


Fig. 7.

Opaiț D-III

Wine amphora also of Sinopean origin, its proposed chronology spans from the Late Hellenistic period to the 5th century AD. The D-III has an oval-shaped body with a short neck, a splayed out rim, handles round or oval in cross-section and ends in a conical base. One can observe that its capacity changes over the centuries, the 1st century AD ones being the largest, having a capacity of about 50 litres³⁴. At *Aegyssus* we have identified a single neck, rim and handle fragment, dated somewhere between the 3rd and 5th century AD.

- 27) AEG96/00004. Neck, rim and handle fragment with a fine fabric, Munsell 2.5YR 5/8 red colour, fine inclusions, evenly fired and Munsell 10R 4/8 red colour slip-wash. Measurements: dg= 11.20 cm; dt=2.90 × 5.20 cm; h=7.80 cm. Context: Aeg '96, sq. P12, *passim* (Fig. 7/3).

Spatheion

Considered the last phase in the development of the Keay³⁵ XXV type, this North-African amphora³⁶ has a very modest size and capacity of circa 1.50 litres. General characteristics include a cylindrical body ending in a conical base, small handles, a short, narrow neck and a slightly splayed-out, triangular rim. Its size and shape could indicate that this type of vessel occupied space between larger types of amphorae, thus utilizing the cargo space inside a ship more efficiently. Usually found across the Mediterranean basin, as we can see there are finds in the Pontic basin as well. Due to

³⁴ Opaiț 1987, 250-251; Opaiț 2004, 31.

³⁵ Keay 1984.

³⁶ Paraschiv 2006, 133-135; Riley 1979, 227.

its small capacity, it has been proposed that it could have contained ointments, scented oils etc. At *Aegyssus* we have identified a single neck and rim fragment.

- 28) AEG76/00016. Rim fragment with a fine fabric, Munsell 5 YR 7/6 reddish yellow colour, fine inclusions, evenly fired and same-colour slip-wash. Measurements: dg=5,13 cm; h=3.50 cm; di=2.90 cm. Context: Aeg '76, *passim* (Fig. 7/4).

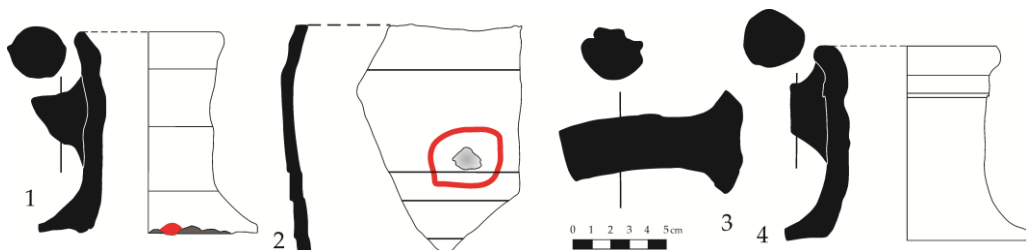


Fig. 8.

Carthage Late Roman Amphora 1

A well-known amphora in the Late Roman period, the LRA 1 seems to originate from a Cilician imitation of Dressel 30/ Gauloise 4³⁷. General characteristics include an oval-shaped body, short cylindrical neck, a rounded rim, often asymmetrical handles, with two or three rather deep ridges, that seem to be twisted when applied to the body; beginning with the 5th century there is a ridge added under the rim and from the 6th century the body is decorated with a series of concentric ridges that give a "rib cage" appearance. Some specialists have identified multiple sub-types of this amphora, and on-going research is revealing new kiln sites in the Mediterranean basin. The capacity fluctuates throughout the centuries, but we can safely estimate that the 5th century variant was the largest (about 30 litres), shrinking to as much as 10 litres in the 7th century AD. Furthermore, same as in the case of the LRA 2, the contents were diversified, most often being wine (however, there were analysed fragments that show traces of oil or vinegar)³⁸. At *Aegyssus* we have identified 130 fragments (over half of them being neck, rim and handle fragments) of which 2 neck, rim and handle fragments and one body fragment with an incomplete *dipinto* were drawn.

- 29) AEG78/00029. Neck, rim and handle fragment with a fine fabric, Munsell 2.5YR 6/8 light red colour, fine inclusions, evenly fired, a Munsell 10YR 8/3 very pale brown colour slip-wash and slight traces of a *dipinto* made with a red paint. Measurements: dg=7.90 cm; gb=1.30 cm; dt=3.30 × 3.00 cm; h=10.70 cm. Context: Aeg '78, N4c, level V (Fig. 8/1).

³⁷ Opař 2010, 1015-1022.

³⁸ Opař 2004, 8-10; Paraschiv 2006, 89-92; Peacock 1984, 119-120.

- 30) AEG75/00030. Body fragment with a fine fabric, Munsell 5YR 6/6 reddish yellow colour, fine inclusions, evenly fired, a Munsell 10YR 8/3 very pale brown colour slip-wash and a circular sign made with red paint around a mark in the fabric. Measurements: gp=0.60 cm; l=9.00 cm; h=12.00 cm. Context: Aeg '75, S6 I3a, -1.30 m (Fig. 8/2).
- 31) AEG75/00031. Handle fragment with a fine fabric, Munsell 5YR 7/8 reddish yellow colour, fine inclusions, evenly fired and same-colour slip-wash. Measurements: dt=3.20 × 2.70 cm; l=9.80 cm. Context: Aeg '75, S2 4A, sq. 11-12, -1.50 m (Fig. 8/3).
- 32) AEG75/00032. Neck, rim and handle fragment with a fine fabric, Munsell 10YR 8/3 very pale brown colour, fine inclusions, evenly fired and Munsell 5YR 7/6 reddish yellow colour slip-wash. Measurements: gb=1.60 cm; dg=10.00 cm; dt=3.20 cm; h=10.30 cm. Context: Aeg '75, S1, -1.50 m (Fig. 8/4).

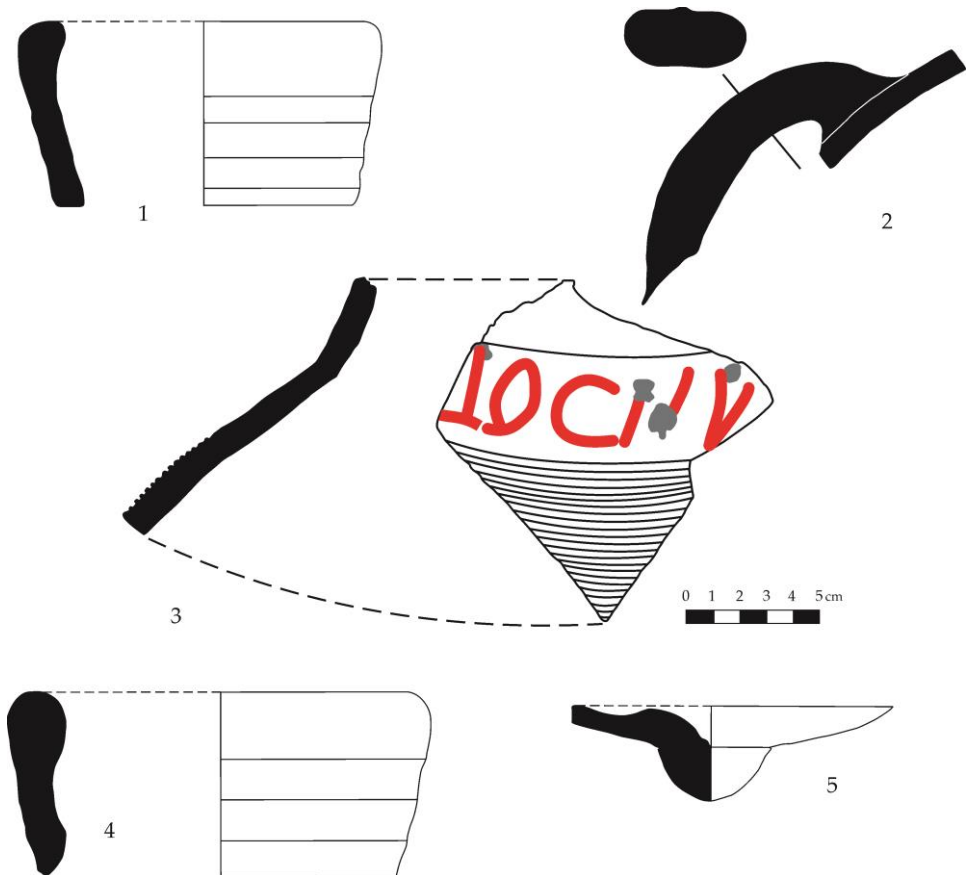


Fig. 9.

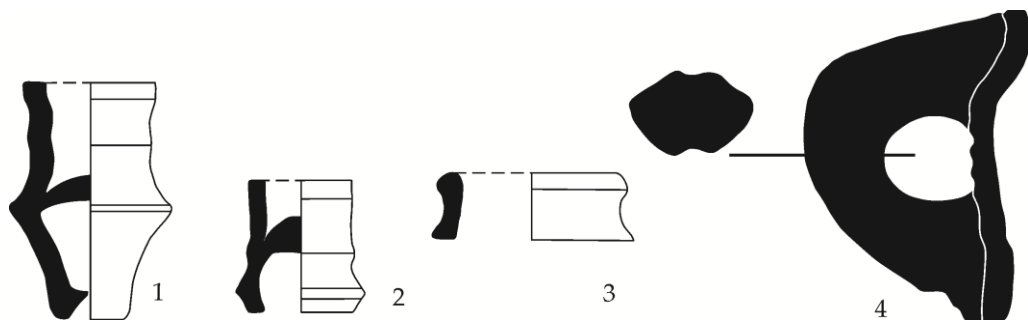


Fig. 10.

Carthage Late Roman Amphora 4

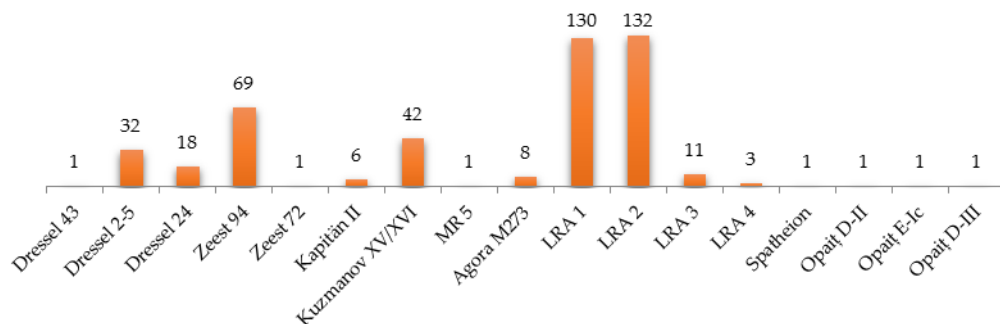
Mainly used for the transport of Palestinian white wine, although there have been examples of fragments containing traces of fish products or oily residues, the LRA 4 has an elongated cylindrical body with a wide mouth and rounded rim and small, circular handles. Kiln sites for this type have been found along the coast of Syria, Palestine down to the Nile region. Its form changes slightly throughout the 4th to 7th centuries AD, having a capacity that varied between 12 and 30 de litres³⁹. At *Aegyssus* we have identified a single body, rim and handle fragment.

- 33) AEG76/00020. Body and handle fragment with a fine fabric, Munsell 2.5YR 4/8 red colour, fine inclusions, evenly fired and Munsell 2.5YR 7/8 light red colour slip-wash. Measurements: gp=0.60 cm; dt=3.50 × 2.30 cm; l=5.60 cm; h=9.00 cm. Context: Aeg '76, N3d, -0.90 m (Fig. 10/4).

INTERPRETATION AND CONCLUSIONS

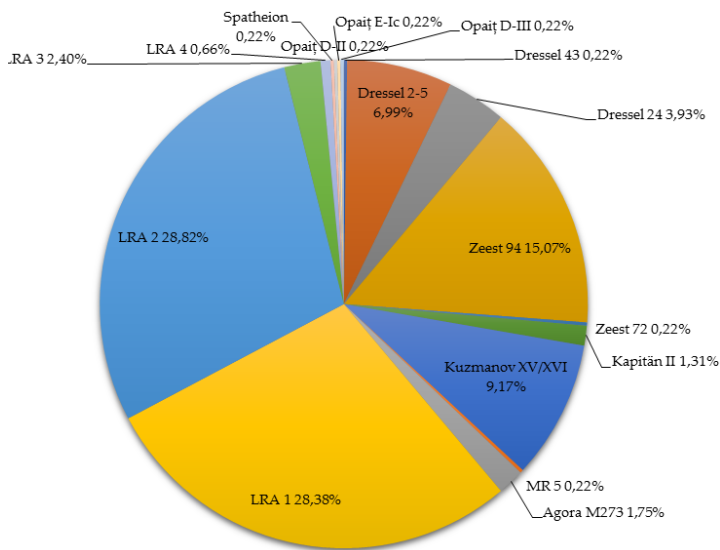
To sum it all up, out of the 17 identified types described earlier, 5 seem to have been produced in the Aegean Sea (on the islands), 3 in the Eastern Mediterranean coasts (Asia Minor, Palestine, Egypt), 7 in the Pontic basin and a single type originates from the North African coast. As the clay variety shows, the LRA 1 and LRA 2 types were produced in the Aegean basin as well as in the Pontic one. There should be no surprise to anyone that the main seafaring suppliers for wine and olive oil of a settlement situated on the Roman *limes* at the Mouth of the Danube are the eastern parts of the Roman Empire. Of the *Pars Orientis* there is an even distribution between Mediterranean and Pontic centres, at least by the number of amphora types, not by quantity. The following graphs may shed more light on the subject, by showing numeric (Graphic 1) and percentage ratios (Graphic 2).

³⁹ Opaïț 2004, 20; Paraschiv 2006, 97; Peacock 1984, 122-123.



Graphic 1. Numeric distribution of identified fragments by amphora type.

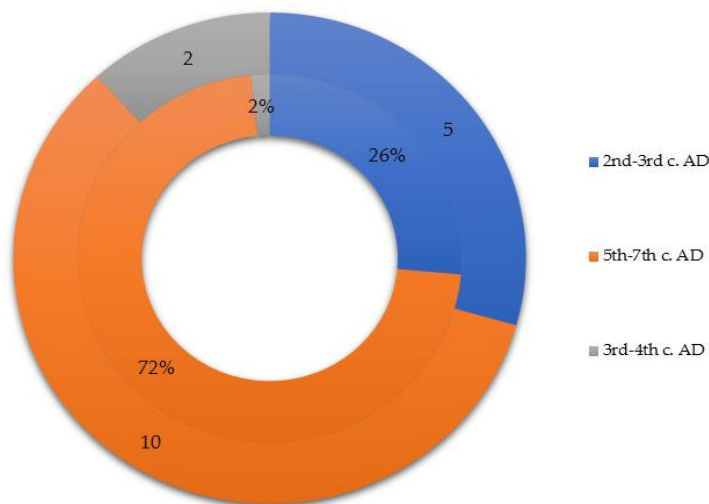
From a chronological standpoint, one can observe two major agglomerations and an intermediate period: on the one hand, in the interval between the 1st and 3rd centuries AD we have 5 types circulating; on the other hand, between the 5th and 7th centuries AD we have 10 types; last but not least, during the transition from the Principate to the Dominate – 3rd to 4th centuries AD – only 2 types were identified. The ratio is as follows: 26%/72%/2% (see Graphic 3).



Graphic 2. Percentage ratios of different types.

Furthermore, amphorae produced in the Eastern Empire reached the settlements at the Mouth of the Danube either by ports on the Western Black Sea coast, or most probably by navigating the Danube upriver, proof being the amphorae warehouse

discovered and published by A. Opaïț⁴⁰. By observing the situation of nearby settlements⁴¹, one can't help but notice a significant increase in products carried by eastern amphorae beginning with the 4th century AD, when the city renamed *Constantinopolis* is elevated to capital status and the supply of troops on the *limes* of the diocese of *Thracia*, close to the capital, becomes a priority.



Graphic 3. Chronological distribution of types.

Regarding the maximum estimated consumption, we have chosen to split the early period of the Roman Empire from the late period. For the early Roman period (from the 1st to the 3rd century AD) the maximum estimated consumption of imported wine was about 1270 litres (approximately 75% originating from the island of Kos⁴² and 25% of Heracleian origin), while the maximum estimated olive oil consumption was similar, of about 1350 litres. These equivalent quantities (frequent consumption of wine and olive oil being a trademark of Roman civilisation) should not be a surprise due to the fact that after the integration into the Roman administration of the territory we know now as Dobroudja, newly arrived colonists and also local elites had access to imported products by means of either the military factor or private enterprises⁴³. In comparison, for the late Roman period (from the 5th to the 7th century AD), if we are to consider wine as the only

⁴⁰ Opaïț 1987, 145-155.

⁴¹ Opaïț, Ionescu 2016; Opriș 2003; Rădulescu 1976; Scorpan 1975; Topoleanu 2003, 190-245.

⁴² It should be noted that this grape vine from Kos could have just as easily been "transplanted" to other parts of the Empire with favourable climate and sold as such because the amphora was also a marketing element, a guarantee of the product contained.

⁴³ For more details see also Opaïț 2013.

content of LRA 1 amphorae and olive oil as the only content of LRA 2 amphorae⁴⁴, the maximum estimated consumption of wine was approximately 3000 litres and of olive oil approximately 5300 litres, as shown in graph no. 4. Hence, one can observe a significant increase in imported olive oil, approximately 300%, in the Dominate period compared to the Principate period, all the while the quantity of imported wine is increased by only 130% in the Dominate period as well.

These surges in quantities resemble some written sources⁴⁵, most notably Procopius of Caesarea's *ΠΕΡΙ ΚΤΙΣΜΑΤΩΝ* which tells us about a refortification and repopulation of the settlement of *Aegyssus*, if not a reconstruction, maybe even *a solo*, during the reign of Justinian. This comes as response to the extremely politically and military unstable period for the *Diocesis Thraciae* between the end of the 3rd and the end of the 4th centuries AD. During that time, it had fallen victim to numerous barbarian incursions, such as several raids from the Goths, ending with the death of emperor Valens at *Hadrianopolis*, Hunnic invasions of Rua and Attila, Kutrigur and Sclaveni raids, to name a few.



Graphic 4. Maximum estimated consumption.

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⁴⁴ Paraschiv 2006, 89-92.

⁴⁵ Iliescu *et alii* 1964, 471: „4.7.20. φρούριόν τε δεδημιούργηκε νέον αὐτός μετ' αὐτήν, ὅπερ Αἴγισσον ὀνομάξουσιν”.

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