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YA'AMUN MAIN WINE PRESS FROM ROMAN TO THE END OF UmayyAD AND EARLY ABBASID PERIODS IN NORTHERN JORDAN

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ABSTRACT

The grapes and wine industry are mentioned in the Bible, The wine press technology it seem the first appeared in the Roman periods, there are many examples from this period in Rome and other sites. In addition, the wine industry continued in the region of the Roman era to the Islamic Periods through re-use of the contemporary Roman winepress that has spread in some locations in the region. For example, the great wine press at Ya'amun Site that appeared in the Roman period and continued in use during the Byzantine and late Umayyad early Abbasid eras.

KEYWORDS: Ya'amun , North Jordan, Wine Presses, Grapes , Roman , Byzantine . Umayyad, Abbasid.

1. INTRODUCTION

Wine-making that a great importance in the ancient societies where it's extended roots to the pre-history. It seems the first evidence of the wine press appeared to the beginning of the third millennium BC found at Titris Höyük in southeastern Turkey (Berkowitz 1996); (Gorny 1996: 162, 171). The recent excavations in Areni-1 cave in Armenia appeared wine press and fermentation jars, also a chemical evidence of wine for production around 4000 BC in the late Chalcolithic (Barnard *et al.* 2011: 977-984). The wine-making procedures and scenes of treading grapes on wall painting from Egyptian tombs also appeared on the vases in Greek. In the Roman appeared of the scene of grapes on the reliefs and mosaic pavements (Dugagi-Mendels 1999: 21-33). There are many evidence of the fruits grapes senses appeared on the mosaic floors in churches from the Byzantine periods, for examples, on the floor of Ya'amun Church (Nassar and Turshan 2012: figs. 3-5). There are some examples from Mount Nebo-Mukhayyat at Madaba, on the floor of the Church of the Holy Martyrs Lot and Procopius (Piccirillo 1997: 164, Pl. 204). Furthermore, scene of the wine press on the mosaic pavements at Mount Nebo was found on the floor of the Church of the Holy Martyrs Lot and Procopius (Piccirillo 1997: 164, Pl. 206).

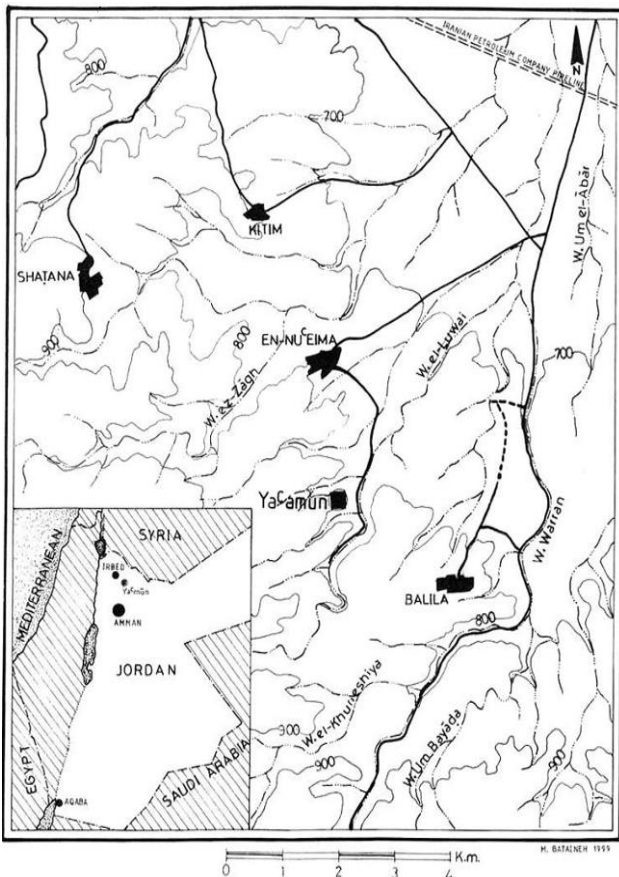


Figure 1. Location of Ya'amun (Map drawn by M. Bataineh).

1.1 Location of the Wine Press of Ya'amun Site

The site of Tell Ya'amun is 23 kilometers southeast of the city of Irbid, Jordan and has been occupied continuously from the Early Bronze Age to the present day. The site was first excavated in 1999 by Professor Jerome Rose of the University of Arkansas and Professor Mahmoud El-Najjar and Doctor Nizar Turshan of Yarmouk University as a joint Bioarchaeological and Archeological Field School. Test trenches that discovered the church were dug late in the 1999 field season. The church was briefly mentioned in the 1999 field report published in the Annual of the Department of Antiquities (El-Najjar *et al.* 2001: 414-415). Wine press is located at the base of the western slope of Tell Ya'amun in northern Jordan. The press has an elevation of 814 meters and it's approximately 400 meters west of the remains of the Byzantine church at the top of the Tell, as shown in Figs. 1, 2.



Figure 2 The area of estimated farm land around Ya'amun.

1.2 History of the Site

The oldest settlements at the site dates back to the Bronze and Iron Ages, evident from stratigraphy and a number of tombs found there. However, this site was well known during the Roman, Byzantine and Islamic periods. We know this because of the many structures at the site dating from the Roman and Byzantine periods, which were reused during the Islamic period (Nassar and Turshan 2011).

1.3 Surveys and Excavations

A survey of Ya'amun was begun in the summer of 1999, with six excavations campaigns under the supervision of Jerome Rose (University of Arkansas), and Mahmoud el-Najjar and Nizar Turshan (Yarmouk University) as part of a joint project involving the Bio-

archaeological and Archeological Field School and the Jordanian Department of Antiquities. The first season of excavations took place in 1999 (El-Najjar *et al.*, 1999; El-Najjar *et al.*, 2001a), the second season in 2000 (El-Najjar *et al.*, 2001b), the third season in 2001 (El-Najjar *et al.*, 2001a, b), the fourth season in 2002 (Rose *et al.*, 2003), the fifth season in 2003 and the sixth season in 2004 (El-Najjar *et al.*, 2004). During these campaigns, six main structures were unearthed, including a Christian basilica (the main church) lying on the southeast slope overlooking the site, and dating from the late 5th to the early 6th centuries by Greek inscription (Nassar and Turshan 2011, Fig. 2; Turshan and Nassar 2011), and five tombs dating from the Roman period, located to the southwest of the site.

1.4 The technique used in the wine press

A short background information on how wine was manufactured in antiquity is needed before involved with a detailed analysis. The most important part of wine making at Ya'mun was grapes. The grapes were harvested in late July to September, the harvest time depended on what type of wine you wanted to make. On occasions, the grapes were left on the vine to until fully ripened. This caused the sugar content of the grapes to rise; ergo the wine would be sweeter and the alcohol content would be higher after fermentation. After the harvest, the grapes were taken to the wine press, which was almost always carved in the bedrock near the fields, as grape skins are very delicate and can bruise easily during transit. The grapes were then allowed to sit and the static pressure from the weight of the grapes would crush the sweetest, ripest grapes. The must (juice) extracted from this was called *lixivum mustum* and was used to make the highest quality wines (Fleming 2001: 44). It is interesting to note that the actual grape juice is always light-colored, no matter what the color of the skin or flesh of the grape. Red wine is given its color in the fermentation process, when red or black grape skins remain in the fermentation container, in contact with the juice. It is the duration of this contact that largely determines the color of the finished wine (Phillips 2000: 41). *Lixivum mustum* was generally considered to be white in color. Next, the grapes were then moved into the treading floor and crushed by barefoot workmen who walked back and forth, sometimes leaning on one another or holding on to a rope tied to a nearby support beam. There were strict rules for those who were treading the grapes: "The men that tread must get into the press, having scrupulously cleaned their feet, and none of them must eat or drink while in press nor

must they climb in and out frequently. If they have to leave the press, they must not go with bare feet. The men that tread must also be fully clad and have their girdles on, on account of the violent sweating" (White 1977: 71). The new wine, *mustum*, flowed away from the floor through a channel cut into the stone that connected to a vat with ajar recessed in the floor to collect the dregs (Fleming 2001: 44). The pressed grapes were then moved to the center of the treading floor, sometimes placed in flat sacks or within a wound rope, to be pressed again (Frankel 1997: 82). The second pressing was carried out by mechanical means. There are several types of mechanical press, but we will focus on the single fixed screw press (because that is what is believed to be found at Ya'amun). The single fixed screw press consisted of a wooden screw fixed into the floor of the press (usually in the treading room). A pressing board with a hole in it was slipped over the screw and a large nut was placed above it. There were holes in the nut to allow for wooden pegs to be inserted to tighten the nut. When the nut was tightened, the pressing board brought pressure on the grapes that had been placed under the board and nut (Frankel 1999: 140). The wine that was produced this way was called *mustum tortivum* and was considered to be of inferior quality (Fleming 2001: 44). Not much was left of the grapes after being pressed twice; however, winemakers in antiquity were very thrifty. The twice pressed grapes were soaked with fresh water and then a few days later with salt water, and then pressed again with the screw press. This produced a mediocre wine called *lora*, which only had about 0.3 % alcohol. *Lora* was included in the daily rations of an estate's workers and slaves (Fleming 2001: 44). Whatever was left of the grapes after the final pressing was used as fertilizer.

2. DESCRIPTION OF THE WINE PRESS

The press contains seven individual pressing chambers, and has a main filter/reservoir and storage vat connected to the press via a small channel as described below (Fig. 3).

The pressing of chamber 1 (Figs. 3,4)

It has a length of 3.20 m and a width of 1.40 m. The stone floor is partially damaged due to exposure to various environmental elements. The floor slopes gently to the west to allow the must (juice) to flow into the pressing chamber's filter. The filter for pressing Chamber 1 measures 0.54 × 0.44 × 0.25 m and has a capacity of 59.4 liters.

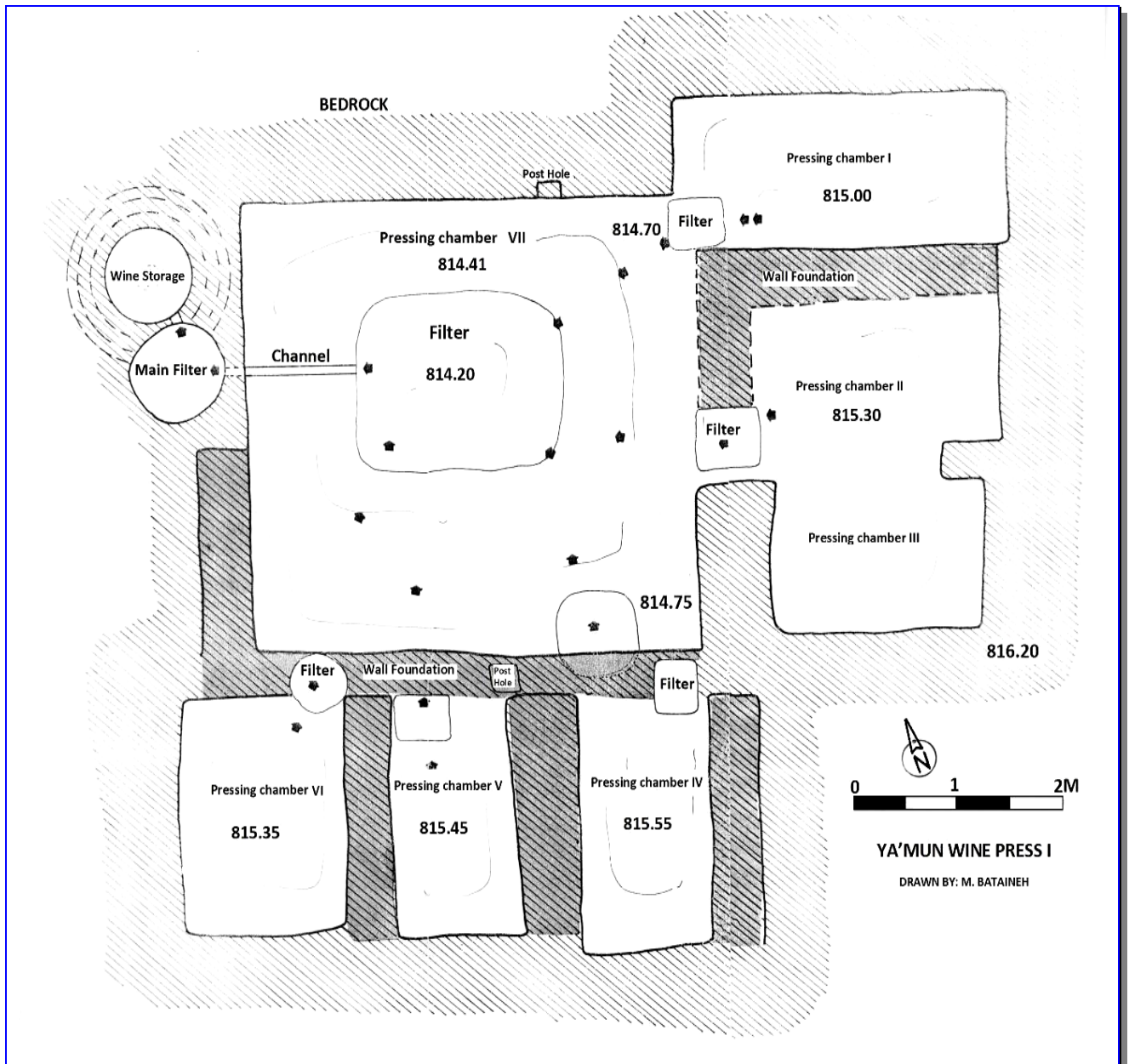


Figure 3 Ya'mun wine press



Figure 4. Ya'mun wine press

The pressing of chamber 2(Figs. 3, 4)

The Pressing Chamber 2 has a length of 2.40 m and a width of 1.66 m. Chamber 2 is located directly south of Chamber 1. The floor of Chamber 2 slopes slightly to the west to allow the must to flow into the chamber's filter.

The pressing of chamber 3(Figs. 3, 5)

The Pressing Chamber 3 has a length of 2.40 m and a width of 1.66 m. Chamber 3 is located directly south of Chamber 2. The floor of Chamber 3 slopes slightly to the west to allow the must to flow into the chamber's filter.

The pressing of chamber 4 (Figs. 3, 5)

Pressing Chamber 4 is situated just south of pressing Chamber 3. The chamber is 2.06×1.34 m, with the floor sloping in a northwestern direction for drainage into the filter. There is an interesting feature for pressing Chambers 2 and 3 in that they share the same filter. The filter for Chambers 2 and 3 measures $0.62 \times 0.54 \times 0.30$ m and has a capacity of 100.4 liters.

The pressing of chamber 5 (Figs. 3, 5)

The fifth pressing Chamber is located to the southwest of Chamber 4. Chamber 5 features a length of 2.55 m and a width of 1.28 m. There appear to be two separate filters for Chamber 5. The first filter is attached to the chamber at the northeast end and measures 49 cm in length, 42 cm in width, and 30 cm in depth. The filter has a capacity of 61.7 liters. The second filter is located to the northwest of the first filter and measures $0.80 \times 0.78 \times 0.55$ m with a capacity of 343.2 liters. It is not clear if the second filter was meant just for pressing Chamber 4, if the filter was intended for overflow from the other pressing chambers, or water storage.



Figure 5. Ya'mun wine press

The pressing of chamber 5 (Figs. 3, 4, 5)

Pressing Chamber 5 is located west of Chamber 4. The chamber has dimensions of 2.18×1.20 m. The filter for Chamber 5 is situated in the northwest corner of the pressing chamber and is 0.53 m long, 0.41 m wide, and 0.30 m deep. The filter has a total capacity of 65.2 liters.

The pressing of chamber 6 (Figs. 3, 4, 5)

It is located in west of Chamber 5 and is very similar in size to Chamber 5. Chamber 6 measures 2.18×1.62 m and has its filter situated at the northeast corner. The filter measures $0.48 \times 0.50 \times 0.41$ m and has a capacity of 98.4 liters. The floor of

Chamber 6 is largely undamaged and slopes to the north to allow for the runoff the must.

The pressing of chamber 7 (Figs. 3, 4, 5, 6)

Pressing Chamber 7 is the largest room of the Wine Press and is located to the north of Chambers 4, 5, and 6. Chamber 7 measures 4.22×4.10 m.



Figure 6. Ya'mun wine press

3. DISCUSSION & CONCLUSION

However, whereas Chambers 1 through 6 were probably used for the initial pressing of the grapes, it is believed that Chamber 7 was probably used for secondary treading. This is supported by the fact that there are two post-holes measuring $0.20 \times 0.20 \times 0.12$ m and $0.22 \times 0.19 \times 0.14$ m. These post-holes are very similar in size and shape to the post-holes described by Frankel (1999: 55) used to secure a vertical pole to which ropes could be attached, which the workers could use for support while treading. Though the floor of Chamber 7 is heavily damaged, the outline of the chamber's 7 filter can be seen in the center of the floor. The filter measures 1.02×0.80 m and has a depth ranging from 20 to 70 cm. The capacity of the filter for Chamber 7 is between (variations due to the damage) 163.2 to 571.2 liters. The main filter/reservoir of the Wine Press (Figs. 2, 2-5) is located on the west side of Chamber 7 but is connected to the filter of Chamber 7 by means of a small channel measuring 1.26×0.08 m and featuring a depth of 0.03 to 0.11 m. The main filter/reservoir itself measures 90×80 cm and is 100 cm deep. This gives the main filter/reservoir a capacity of 765 liters. Situated next to the main filter is the collection vat for the Wine Press. The vat measures 1.90×1.95 m and is 2.15 m deep. The collection vat has a total capacity of 7975.7 liters. The total capacity for Chamber 1 through 7 is 793.1 liters and the capacity for the main filter is 765 liters (which equals 1558.1 liters total).

It is important to note that the Wine Press lie at the base of the Necropolises at Ya'amun and are subjected to the collection of ceramic sherds that

have been washed from the top of the Necropolis. Instillations such as wine presses are notoriously difficult to date because they are cut into the bedrock of an area or constructed of plaster, and thus lack stratigraphy (Walsh 2000: 149). There are problems with using the pottery sherds on account of the fact that the pottery analysis can give us misleading dates because of deposits of unrelated sherds by natural events. However, we can use the sherds to propose an end of usage date of 750 A.D. based on the presence of the latest sherds – the Umayyad pottery and early Abbasid. The most secure way to date a wine press is to look for attributes that are believed to have been introduced in specific eras, i.e. slots for pressing levels, screw post sockets, etc.

As mention above, the wine press at Ya'amun is similar in age and construction to many of the wine presses found in the Levant. The wine presses at Khirbet Yajuz, Jordan (Khalil and Al-Nammari, 1983), Rehovot (Khirbet Duran), in playtime (Roll and Ayalon, 1981), and Khirbet 'Azzun, Palestine (Roll and Ayalon 1981) all have characteristics that can be compared to the wine press at Ya'amun. Excavation at Khirbet Yajuz and Khirbet Duran have uncovered the remnants of mosaic flooring; also, the press at Khirbet 'Azzun has a variation of the screw post socket found at the wine press at Ya'amun. Furthermore, the Wine Press at Ya'amun bears a striking similarity to the pressing complex at Khirbet Yajuz in the north of Amman. The arrangement of the press rooms and the general size and shape of the presses are analogous. The complex at Yajuz is actually two almost identical presses situated right next to each other. It should be noted that the north press at Yajuz is an improved version of the south press (Khalil and Al-Nammari 2000: 46). Regardless of which press was constructed first, both of the presses at Yajuz and the Press at Ya'amun have similar construction and production capacities (Table 1). Both presses have chambers for the production of *lixivum mustum* and a second chamber for treading. The presses at Yajuz, in addition to a treading floor, have a screw post socket that would allow for mechanized pressing to produce *lora* grade must. Although no evidence of mechanized pressing has been found at the Wine Press, its size and production capabilities seem to suggest that one might have existed. It is also important to note that the North and South presses at Yajuz were both active at the same time because of the border constructed to separate the must into the two treading floors and allow simultaneous use by different production teams or vine growers (Khalil, Al-Nammari 2000: 46). Again, the importance of this will be discussed in the following sections.

3.1 The Importance of Wine

It is necessary to have an idea of just how much wine and the wine trade meant to Rome/Byzantium to understand the importance of this industry. Wine played an important role in everything from simple daily activities to complex religious ceremonies. One of the most important aspects, if not the most important, was its use as liquid refreshment. Wine was not a luxury or only occasionally present, but was instead common phenomenon in most countries of the ancient world. With the scarcity of water and its risk of contamination, wine was almost always consumed mixed with large percentage of water. Ancient wines were stronger, both in alcohol content and perhaps flavor, making the water down of their drinks a necessary. The watering of wine served two important purposes:

- 1) The presence of the alcohol ensured that the water mixed with the wine was safe to drink
- 2) The water caused the alcoholic effects of the wine to be slowed and therefore allowing the drinker to enjoy wine for longer period.

Wine was also mixed with a variety of other elements to add flavor – honey, seawater, fish oil, etc. Wine was also used as the base for medicines “Crush an iris [root] which should be white as possible and soaked in old wine...” (Fleming 2001: 25). Wine provided an important part of the evening meal in antiquity, not just in the form of an intoxicant. Drinking the wine with a meal provided liquid refreshment and aids in digestion, stimulating salivary glands, gastric secretion, and motility (Grivetti 1995: 14). Wine was a staple source of nutrition in antiquity and provided an estimated one-quarter of an individual's daily caloric intake, and about one-third of the body's iron requirements. Wine also supplies significant amounts of vitamins B₂ and B₆ and the essential element manganese (Grivetti 1995: 17, tables 1.1 – 1.2). Tchernia's work on wine consumption in Roman Italy (1986) integrated comparative data from the fourteenth to nineteenth centuries with ancient historical sources to argue that men required between 146 and 182 liters of undiluted wine annually during the Roman period and women about half that amount (Kingsley 2001: 46). Wine also played an important role in social activities. It was used as a lubricant for social discourse. Wine eases communication by lowering inhibitions and, just as important, by marking boundaries of inclusion among the participants (Walsh 2000: 221). Fleming (2001: 57) says: “For song, laughter, and dancing are characteristic of men who drink wine in moderation” – Plutarch, *Table Talk* III. Drinking was not the only social collaboration to come from wine. The act of growing grapes to make wine and the process of making wine

helped to built relations among the laborers. A concomitant harvest and wine production also maximized the labor force and enhanced social cohesion through hard work and celebration (Walsh 2000: 144). Another social aspect of wine is that of religion. It has played a role in many major religions. Religion was especially important in Byzantium with Constantine's conversion to Christianity (312 A.D.). It has been argued that the only reason that viticulture survived the fall of the Western Roman Empire was because of the symbolic role that wine plays within Christianity; a role derived primarily from its use by Christ in establishing a new covenant, described in St. Matthew's gospel, where wine symbolized the sacrificial blood of Christ (Unwin 1991: 134). Remember the remains of a Byzantine era church are located on top of Tell Ya'amun. The symbolic drinking of wine as part of the Christian Eucharist, Mass or Communion, has played a fundamental role in influencing the global distribution of viticulture, and the social and ideological significance of wine (Unwin, 1991: 139). In other words, the religious aspects of wine have attributed to its value as a trade good, this is of course, in addition to its diet value.

4. CONCLUSION

The data from Table 1 shows that the Wine Press has the ability to produce more than both of the wine presses at Khirbet Yajuz. It has been put forward that the presses at Yajuz, because of the elaborate pressing method and large size, served an area of large vineyards intended for the intensive production of wine (Khalil and Al-Nammari 2000: 41). It is reasonable to consider that a wine press that has the capability of storing more than a wine pressing complex believed used for the intensive production of wine, to have been used for a similar purpose.

However, the insight that is gained from this is that the smallest press at Ya'amun can produce one-fifth the wine of the total complex at Khirbet 'Azzun. This raises the question "If the smallest press at Ya'amun can produce one-fifth of a known wine making complex, how much can all the presses at Ya'amun produce if they were used contemporaneously? It was mentioned earlier the amount of available farm land surrounding the Tell. To get an idea of how much wine can be produced from an area, consider the follow estimate. If a [grape] plot was planted according to the modern practice of having vines 1.83 meters apart, in a row of 3 meters wide, then a two-dunam (2000 square meters) vineyard would hold 275 vines. This number is a rough estimate because ancient vineyard varied in space depending on the nature of the farm. This example used modern type's grapes grown in

southern Israel. Still, this number of vines can act as an approximation for calculating wine consumption. One vine yields approx. 8 lbs of grapes. Hence 275 vines will yield 2.200 lbs of grapes. It takes on average 12 lbs of grapes to produce a gallon of wine (3.78 liters). A two-dunam vineyard would therefore, will yield approximately 694 liters of wine [183 gallon] (Cox, 1985: 32). Six-hundred and ninety four liters of wine can be produced by any of the presses at Ya'amun, and the farm land available to grow grapes around Ya'amun is estimated to be more than 2000 square meters (Fig.2). *Note: The highlighted area was chosen based on relative steepness of the area, the ability to collect run off rain water from the Tell, and distance from the Tell and wine presses.* Now it is known that any place, at the present, is not the same as it was 1000 years ago or even 100 years ago. Therefore, it is realistic to say that the environment around Ya'amun was not the same as it is now. However, research done by Abdulla Ahmed Alakkam at Ya'amun has shown that "Fluctuations in climate patterns during the past four millennia were apparent from the previous results. But the fluctuations were not so severe that they could have limited the diversification of adaptive systems and hence stunted the development in any given time period" (2002: 132).

There is one more piece final of information that lends support to the exportation theory for Ya'amun, and that is the sophisticated structure and size of the wine press it selves. The elaborate mosaic wine press (such as at Ya'amun and Rehovot) were erected at a point between the urban area and the countryside around it. This development, which began at the start of the Byzantine (302 A.D. period, reflects the economic prosperity in [ancient] Palestine from the fourth century onward (Avi-Yonah 1958: 246). The rate of production was increased and the export trade, consisting mostly of agricultural products such as wine, oil, and grain was expanded (Hirschfeld, 1983: 218). That is to say that equipment used to create trade goods were in fact a reflection of the amount of goods being traded.

Much more research still needs to be done at Ya'amun to confirm the theory that a large portion of the wine produced at Tell Ya'amun was intended for export and where it was exported to. Research is also needed to explore the idea that the elaborate tomb and the wonderful mosaic at Ya'amun might be related to the wine trade. However, the information provided by the size, production capacities, and construction attributes; as well as, comparisons to know wine producing complexes lend support to many of the ideas about financial well being and a stable environment to procure those finances at Ya'amun.

Table 1 Collection Vat Comparison of Ya'amun and Khirbet Yajuz.

Collection Vats	Ya'amun Wine Press	Khirbet Yajuz North Press	Khirbet Yajuz South Press
Length (Meters)	1.90	1.40	1.40
Width (Meters)	1.95	1.15	1.15
Depth (Meters)	2.15	2.03	2.03
Capacity (Liters)	7975.75	3268.3	3268.3

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