Ancient Roman Winemaking

**Introduction:**

To the ancient Roman people, wine was not simply a pleasure, but a daily necessity. The Romans already possessed knowledge of winemaking techniques early in their history, but as they began to conquer neighboring civilization, more land became available that allowed them to sell wine commercially, and soon wine became the daily drink of all Roman classes. With such an important role in Roman diet, culture, and history, I immediately became intrigued by Roman wine and chose to recreate the winemaking process for my research project. In this paper, I will first share a brief history of wine and wine production within the Ancient Rome (753 BC–476 AD). Then, I will describe the role of Roman wine to classical diet and Roman culture. Next, I will examine the ancient primary and secondary sources available that discuss wine and the winemaking process. Finally, I will describe my attempt to recreate this winemaking process using these sources as my guide, making my own necessary changes along the way.

**Background:**

Wine is the product of alcoholic fermentation of grape sugars: once the skins of grapes have been broken, wild yeasts present on the surface of the berry start the metabolic process of converting sugars to alcohol. The Roman winemaking process was greatly influenced by its neighboring civilizations, such as the Greeks and Etruscans, and they borrowed heavily from
their techniques.¹ Wine production first began by picking grapes and treading upon them by foot. This juice was filtered and then pressed or stored in large vessels to ferment. Finally, modifications were added such as spices or herbs, and the wines were either enjoyed immediately, sold, or allowed to age. These ancient wines, both white and red, were often extremely sweet and high in alcoholic content.² Because of the high alcohol content and strong flavors, wines were usually diluted before consumption, often equal parts water and wine.³

Wine soon became a staple of the Roman diet, in part due its great nutritional value. The most crucial element of the classical diet was caloric intake, and wine was a liquid high in carbohydrates, a rich source of calories. Wine thus took on a critical role as food to the ancient Romans: it is estimated that the average consumption of wine in Rome was 27 ounces per adult a day (about 600 calories), equivalent to ⅓ of the daily caloric intake for an adult.⁴ As a staple of the Roman diet, all classes of Roman people, from the senators to slaves, drank some form of wine. Women and children also consumed wine as well. Finer wines, such as Falernian wine, were enjoyed by senatorial families, while wines such as lora (thin, bitter wine) and muslum (wine mixed with honey) were enjoyed by slaves and the lower classes.⁵ Wines were not only consumed by different classes of people, but also produced by different classes. More wealthy citizens of Rome owned farming villas, on which they built complex wineries used to make wine in large quantities to sell commercially.⁶ Lower classes, such as subsistence farmers and

³Ibid., 75.
⁴Thurmond, From Vines, 3.
common folk, used simple tools to produce their own wine, made to drink immediately rather than to sell. No matter the differences in quantity and quality of wine made, it is clear that wine became ubiquitous in Rome, enjoyed by all classes.

Accessible by all people, wine naturally developed a cultural role within Rome and became integrated into religious and societal practices and beliefs. Wine was the preferred libation to Roman deities, and was often consumed or presented at funerals and festivals. In addition, as wine became available to the masses, wine took on a social role: bars were present in Roman cities such as Ostia, Pompeii, and Herculaneum, where lower classes would gather and discuss. Senators and equestrians, those of higher statuses, held convivia, their own version of the Greek symposium, involving wine, food, women, and celebration.

Several primary sources on Roman wine enlighten us to its presence and importance in Roman society. Authors such as Cato (De Agri Cultura), Varro, and Columella (De Re Rustica) describe viticulture and the winemaking process on ancient villas, giving specific instructions as how to produce the best possible wines. Other authors, such as Pliny the Elder (Naturalis Historia), describe which wines are most palatable, and which regions across Italy produce the finest wines. While extremely useful in identifying the societal and cultural aspects of wine, perhaps the most specific account is that of Apicius. His work De Re Coquinaria (On the Subject of Cooking) is a Roman cookbook, which within it contains a specific recipe for conditum paradoxum (spiced white wine). All of these authors influence much of what we know about

---
7 Thurmond, From Vines, 3.
9 Thurmond, From Vines, 235.
Roman winemaking, and it is through their work, as well as the addition of secondary sources, that I used to reconstruct ancient Roman wine. Cato and Columella’s work was particularly guiding in the process of treading grapes, and I used Apicius’ recipe for *conditum paradoxum* to mix in additives and create the final product: spiced wine. Although certain changes had to be made due to financial and age-related restrictions, I believe that the flavor of my final product is likely a fair imitation in taste.

**Reproduction:**

The winemaking process began with the harvest; in Italy, with its many subclimates, this typically took place between mid-August to late November.\(^\text{11}\) Most ancient sources, including Columella and Palladius, recommended tasting the grapes for sweetness to see if they are ripe. Once the grapes were confirmed for ripeness, slaves used billhooks to cut clusters and placed them in harvest baskets.\(^\text{12}\) In an effort to recreate this beginning of the winemaking to the best of my ability, I researched varieties of grape species used in the classical age; however, the only remaining sources on viticulture, such as Pliny, indeed refer to specific grapes, but there is no manner in which to match his description to the modern varieties. I then attempted to acquire native North Carolina wine grapes from nearby vineyards, but since out of season, they cost an exorbitant amount. Therefore, I heeded Columella’s advice: I went to the grocery store and tasted clusters for ripeness, selecting the ripe grapes with the thinnest skins to yield the best results: seedless red grapes.

I then calculated how many grapes I would need. Typically, the Romans made wine in thousands of liters; however, I myself did not need such a large amount, and instead dedicated

---


\(^\text{12}\) Cato, *De Agri Cultura*, 9.
myself to recreating a typical modern 750 ml bottle of wine. Since a typical 750 ml bottle of wine contains four to six clusters (75-100 grapes), I then purchased four clusters, or approximately 400 grapes.\textsuperscript{13}

Once the grapes were picked in clusters, slaves wheeled them to ancient wineries. Cato gives an excellent account describing the typical winery found in an ancient villa farm, including mechanical wine presses, pitchers, iron hooks, sieves, bronze disks, cushions, and ladders.\textsuperscript{14} However, for subsistence farmers and common people, much simpler methods and materials were employed, notably a portable treading tub.\textsuperscript{15} I chose to use the subsistence farmer’s method of winemaking, as it was the technique I could most accurately replicate. Most notably, this meant not using tools found at a winery, such as a wine press. Therefore, instead of taking my grapes to a winery, I simply collected them.

The next step is the treading of the grapes, in which implies the breaking of grape skins and pulp, typically by human feet. Subsistence farmers used a portable treading tub (or vat), typically a rectangular basin of masonry.\textsuperscript{16} To tread, two to seven slaves carefully washed their feet and stripped to their loincloths, and stepped into the treading tub.\textsuperscript{17} They then stepped to a cadence, usually accompanied by someone playing the double flute (aulos) or pipes (syrinx). Because this was a slippery job, treaders used crutched, curved staffs, or locked arms with each

\textsuperscript{13} Gerling, Chris, "Conversion Factors: From Vineyard to Bottle," (Untangling the Concepts of Vine Size, Capacity, Crop Level, Vigor, and Vine Balance | Viticulture and Enology, 2011).

\textsuperscript{14} Cato, De Agri Cultura, 25.

\textsuperscript{15} Thurmond, From Vines, 148.

\textsuperscript{16} Palladius, Opus Agriculturae, (London, 1975), 1.6.

\textsuperscript{17} Thurmond, From Vines, 148-151.
other to support themselves.\textsuperscript{18} An image of an ancient mosaic in which this scene is depicted can be found below (figure 1.1)\textsuperscript{19}.

\begin{figure}
\centering
\includegraphics[width=0.5\textwidth]{mosaic}
\caption{Figure 1.1}
\end{figure}

To recreate the treading process, I first asked a friend (with no wounds on feet or legs) to assist me so there would be at least two people treading the grapes. Together, we carefully washed and dried our feet. Then, I took a large rectangular box, lined it with plastic tarp, and placed my clusters of grapes within the box. My friend and I then walked to the Duke Gardens (wearing clean sandals as to not dirty our feet) to best mimic the agricultural setting. Once we arrived in a clear grassy area, I placed another plastic tarp on the ground before setting my box of grapes down so dew from the grass would not sink in (figure 1.2). Next, to simulate the music played when slaves tread upon the grapes, I played a musical recording on my phone. I chose to play a piece titled “Poem Mor,” a recording of syrinx music by Musica Romana, an ensemble dedicated to recreating Ancient Roman musical sheets found at archaeological sites. Once the music was playing, my friend and I stepped into the box, locked arms, and tread upon the grapes.

\begin{flushright}
\textsuperscript{18}Ibid., 148-151. \\
\textsuperscript{19}Unknown, \textit{Treading of Grapes}. Unknown, mosaic, Room of the Autumn Mosaic, Badajoz Province, Spain.
\end{flushright}
in cadence with the music, to the best of our abilities. At first, the grapes were hard underfoot, but after twenty minutes of treading, the juice had separated from the grape skins, leaving a water mixture in the box (figure 1.3). After this, I collected the must in a plastic tub and took it back to my dorm.

Figure 1.2

The treading process, in both ancient and modern times, extracts 80% of potential must (from the Latin vinum mustum, “young wine”), which is freshly crushed fruit juice that contains skins, seeds, and stems of the fruit. To create a wine in ancient Rome, this raw must would then be collected from the treading tubs and then filtered through a colander of withies or rattan, which collected the stems, seeds, skins, and other impurities. To filter the raw must produced

---


by my own treading of grapes, I poured the raw must a tight mesh metal strainer, which collected the stems and skins. The filtered must then emptied into a bowl beneath. I noted that at this point, my filtered must had a muted red or pink coloring, and was cloudy as well. I believe the coloring of the filtered must was due to the treading of the grapes, in which the juice came in contact with the skins and gave it its reddish hue.

At this point, it was possible to press the must further through the use of a wine press. Cato and Pliny allude to wine presses in their respective works, but these machines were only present on farming villas due to size and expense, and would not have been accessible by subsistence farmers or other winemakers. Therefore, like some subsistence farmers, I elected to skip this step.

The next step in the winemaking process was taking this filtered must and placing it in fermentation vessels. The most typical fermentation vessel was the *dolia* (*dolium, pl*), large, unglazed terracotta vessels. The innards of these vessels were coated with pitch (tree resin) to prevent leaks, and were large containers, typically containing between 100-200 gallons of liquid. The filtered wine must would be placed into these large vessels and then buried ⅔ of the way in a cool place, such as a basement or sheltered building. At this point, the fermentation process would truly begin in which the sugars found within the wine are catalyzed to alcohol through the agency of the natural yeast found on grapes. The duration of Roman fermentation varied, but Pliny estimated an average of nine days while Catho estimated a maximum of thirty days.

---

25 Cato, *De Agri Cultura*, 45.
However, I myself could not allow my wine to ferment: since I am underage within the United States and cannot legally possess alcohol at the time this process took place, I was forced to skip the steps of placing the filtered must into fermentation vessels and burying the vessel, allowing it to ferment. Moreover, I killed any possible live yeast within my filtered must by pouring my filtered must into a pot and heating it on a stove to 140 degrees fahrenheit, the temperature at which these microorganisms die.\(^{26}\) In addition, because of skipping the fermentation step, I did not clarify my wine. Clarification is the step in which the wine can shift from a cloudy or opaque product into a clear liquid. This normally involves natural aging clarification (when suspended particles fall to the bottom over time) or adding fining agents that bond with suspended particles and create a clear appearance. Romans traditionally added chalk or marble dust (calcium carbonate) to decrease acidity.\(^{27}\) This missing step of clarification influenced my final product, which will be addressed further. After skipping these steps, I then continued on with the rest of the winemaking steps to the best of my ability, making non-alcoholic wine.

At this point in the winemaking process, at the end of primary fermentation, this bulk wine (\textit{vin ordinaire}) would have been remained on its lees, created for daily consumption and sale to taverns.\(^{28}\) At this time, a majority of modifications would have been made. Modification of wine is the addition of various substances to alter the flavor, aroma, and color that allowed wines to keep for longer periods of time or produce unique flavors. Typically, additives included salt, pepper, wormwood, capers, saffron, and other herbs and spices.\(^{29}\) However, little literary,
artistic, or archaeological remains signify the precise amount of spices added. Instead, only one complete recipe with exact instructions and ingredients remains, a recipe for *conditum paradoxum* (spiced wine) by the author Apicius, author of the Roman cookbook *De re culinaria*. Using my filtered must as “wine,” I followed this. The original recipe, translated from Vulgar Latin, is below for comparison:

“Put six sextarii of honey into a bronze jar containing two sextarii of wine, so that the wine will be boiled off as you cook the honey. Heat this over a slow fire of dry wood, stirring with a wooden rod as it boils. If it boils over, add some cold wine. Take off the heat and allow to cool. When it does cool, light another fire underneath it. Do this a second and a third time and only then remove it from the brazier and skim it. Next, add 4 ounces of pepper, 3 scruples of mastic, a dragma of bay leaf and saffron, 5 date stones and then the dates themselves. Finally, add 18 sextarii of light wine. Charcoal will correct any bitter taste.”

Although the recipe was simple in essence, I decided to make some modifications. Most importantly, this original recipe was to serve to a large number of people, so the sheer quantity of each ingredient was unnecessary. Instead, I adjusted the recipe to make 750 ml, the volume of a typical bottle of wine by modern American and European standards. A sextarius, the cooking unit, is calculated to be about 550 ml, so I therefore reduced the recipe to create 1/15th of the original recipe. By calculation, the entire recipe calls for about 11,000 ml, so I then divided it by 750 to approximate the entire recipe of liquids by 1/15. I then divided the remaining ingredients, namely the additives, by 1/15, and approximately converted them to U.S. system of measurement, such as teaspoons. I then researched the unit of scruples and dragmas, each of which were units described in grams. I then converted those units to ml, and attempted to

---

30 Apicius, *De Re Coquinaria*, (Milan: G. Le Signerre, 1498) 1.1.
convert them to the U.S. system of measurement. My adapted recipe, with modified conversions, is below:

*Put 1 cup of honey into a pan containing 75 ml of wine, so that the wine will be boiled off as you cook the honey. Heat this over a medium high heat, stirring with a wooden spoon as it boils. If it boils over, add some cold wine. Take off the heat and allow to cool. When it does cool, place pan over stove on medium high. Do this a second and a third time and only then remove it from the stove and skim it. Next, add 1 ½ teaspoon pepper, ¾ teaspoon of mastic, 2 bay leaves, a pinch of saffron, 1 date stones and then ⅓ of the date itself. Finally, add 660 ml of light wine. Filter several times, through a fine mesh strainer, and then through a coffee filter. Bottle and chill.*

To begin, I placed one cup of honey in a pan containing 75 ml of my filtered must. I then heated it over the stove at a medium temperature stirring with a wooden spoon as it boils. My wine did not boil over, so I did not feel the need to add cold must. After it boiled, I took it off and allowed to cool. I repeated this process two more times, heating the honey and must mixture until it reached a boil, taking it off the stove, and allowing it to cool. After I took it off the stove the third time, I used a slotted spoon to skim the surface of the mixture. I then added 1 1/2 tsp of pepper, ½ tsp of mastic gum, 2 bay leaves, a pinch of saffron, a date stone and a ⅓ of the date itself. I then moved it back to the stove, added my spices, and simmered for 10 minutes. At this point, pan emitted a strong sweet and peppery scent that filled the room. I allowed that to cool for 5 minutes before adding in the rest of the filtered must, 660 ml. I then heated that on the stove to kill off any possible live yeast, because I could not allow my product to ferment. Finally, since a charcoal filter was not available, I instead filtered it through a fine mesh strainer four times, and then through a coffee filter.
Traditionally, once these modifications were complete, the wine would be stored and shipped in an amphora, a tall jar with two handles and a narrow neck used for storage and transportation.\textsuperscript{31} These amphoras are most often terracotta, but most ancient and modern terracotta jars contain traces of lead, which can be dangerous to the consumer. Therefore, I decided to use a food-safe container: since amphora were considered non-returnable containers in antiquity, I chose the modern equivalent of a glass bottle. Using a funnel, I placed my final “wine” product into my glass bottle and sealed it.

**Conclusions:**

I believe that, despite some financial and age-related restrictions, my recreation of Roman wine turned out well. I greatly enjoyed the authenticity of treading upon grapes outside to create must, as well as the act of making the modifications. Despite skipping a few steps, I believe that my finished product greatly mimicked the spiced wine. The smell of the wine was incredibly strong, filling up the entire room and wafting into the hallway. In terms of taste, my modified version of *conditum paradoxum* was incredibly strong: cloyingly sweet with a peppery bite. Upon tasting it, I immediately understood why the Romans diluted their wine, for it would be potentially undrinkable without added water.

Although I was pleased with the final product, I did notice a few unexpected changes. Firstly, the color of my raw must was a muted red. I had been aiming to create a white wine, in which the juice and skins are immediately separated after treading. However, I believe I might have tread upon my grapes too long to create a white, for the juice immediately afterward was a muted red. Perhaps, upon realizing that red wine would be made, I should have tread longer on the grapes to create a brighter red color. Another issue I ran into was the clarity of my drink.

---

Although I was not expecting my drink to have the clarity of a manufactured, bottled wine, I did not expect it to be quite so opaque. I credit this to skipping the fermentation and clarification steps, in which the wine would have been able to naturally clarify. Perhaps for future endeavors, in which I am of age, I can once again attempt to recreate this recipe using all the steps, and perhaps truly recreate Roman wine.

Works Cited


https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwjx7cGysofbAhXmRd8KHaSwCG8Qjhx6BAgBEAM&url=https%3A%2F%2Fwww.alamy.com%2Fstock-photo-the-
vintage-treading-of-grapes-room-of-the-autumn-mosaic-mosaic-in-59128750.html&psig=AOvVaw2CgVC6ImxF0sCNTjQOizN5&ust=1544020360694482