

**A COMPARATIVE STUDY OF THE TECHNOLOGICAL POTENTIAL  
OF SEV ARENI VARIETY AND ARENI CLONE No. 9**

**A.K. Solomonyan**

*Armenian National Agrarian University*

This study analyzes the physicochemical and colorimetric characteristics of red dry wines produced from the Sev Areni grape variety and its Clone No. 9, with the objective of evaluating the impact of clonal variation on the wine quality. Such a research approach is highly relevant because even within a single traditional grape variety, clonal differences can significantly influence not only the chemical composition of grapes and wines but also their sensory and technological properties. The wines were obtained under carefully controlled microvinification conditions using identical technological processes. This experimental design minimized the effect of external factors, allowing the comparison to focus specifically on the role of varietal and clonal diversity. By applying a uniform protocol, the study ensured that the observed differences could be attributed to genetic factors rather than winemaking practices. Analyses were carried out in accordance with OIV and EAEU GOST methodologies and included quantification of ethyl alcohol, total and volatile acidity, sulfur compounds, as well as phenolic and pigment compounds. Additional assessment of color intensity and hue provided a more comprehensive understanding of the wines' chromatic attributes and allowed for a detailed comparison of their appearance.

The results showed that wines from the parent Sev Areni variety contained higher levels of alcohol, anthocyanins, and total phenolics, which contributed to deeper coloration, a richer structure, and greater potential for aging. In contrast, wines from Clone No. 9 exhibited a milder phenolic profile, lower volatile acidity, and enhanced antioxidant protection, making them particularly suitable for the production of light red and rosy wines. Overall, the study emphasizes the role of clonal selection in shaping the wine quality and technological orientation, demonstrating that the targeted use of clones can expand the product diversity and ensure a stable quality across vintages.

**Keywords:** Sev Areni, Areni clone No. 9, wine, grape variety, clonal selection.

**Introduction.** The use of grape varieties and clones is widespread in global winemaking practice. Certain grape varieties and their clones, when transferred from traditional growing regions to different climatic zones, demonstrate their productive potential without compromising the raw material quality [1-3].

Since wine grape varieties are propagated vegetatively, they can exhibit spontaneous mutations over time. When such natural changes have significant phenotypic effects, the resulting plant may possess valuable traits, which forms the basis for clonal selection and reproduction [4].

Over the past two centuries, clonal selection has contributed to improving vineyard health and productivity, including yield, early ripening, flavor, and color [4, 5].

The core of this process lies in the identification and analysis of variants with mutational origin that differ morphologically and economically-biologically. A plant can be considered a clone only if the altered phenotypic characteristics are retained across vegetative progeny, demonstrating hereditary stability. Clones of a single variety differ from the general population through improved grape characteristics and the higher quality of wine produced from them [6]. Certain selected clones of the Chardonnay variety characterized by high yields and large cluster mass tend to produce lower quality wines compared to clones with lower yields [7].

Grape quality at harvest is the primary factor that later influences the wine quality. Grape ripening begins with veraison and ends with harvest. Studies show that different clones of the same variety may differ significantly in their chemical composition. Some clones are capable of producing wine that differs in color, aromatic profile, and phenolic composition [8].

Wine is considered a complex product whose quality depends on its chemical composition. This composition is significantly influenced by the grape variety [9], cultivation methods [10,11], fermentation conditions [12], vineyard geographic location-related to soil and climatic characteristics [13-15], winemaking technologies [16], and the quality of grapes used [17, 18]. Red wine is produced from red grape varieties. It differs from white wine not only in color but also in body and astringency. Red wine is richer in extractable compounds from the solid parts of grapes [19].

Red wines are characterized by a color range from deep pink to garnet (typical of young red wines), to brick-red (mature red wines), and brown (long-aged red wines) The pulp of almost all red grape varieties has a whitish-pink color, and the red color of the wine is due to pigments (coloring substances) present in the grape skins [20].

Sev Areni is classified as a late-ripening wine grape variety. The aim of this study is to examine the physicochemical parameters of red dry wines produced from the Sev Areni variety and its Areni Clone No. 9, which will allow for the identification of their production potential.

**Materials and methods.** For this study, the Sev Areni grape variety and its Clone No. 9 were selected. The latter was cultivated in a collection vineyard

located in the town of Echmiatsin, established for the preservation of Armenian grape varieties.

To assess the industrial potential of the selected variety and its clone, grape harvesting was carried out in the autumn of 2024. The harvest and grape transportation were conducted using small crates to ensure the preservation of the fruit quality and minimize the risk of damage. The ripeness of the grapes was verified, and the mechanical and chemical composition of the selected variety and clone were measured and analyzed.

Wine production from the grapes was carried out using micro vinification methods under the conditions of the Experimental Laboratory of Brewing and Distillation at the Armenian National Agrarian University.

After destemming, the grapes were crushed, and the must was transferred into fermentation and maceration vessels. To ensure a faster and more vigorous fermentation, 3 *g/dal* of dry active yeast of strain AS-2 was added to the must. During fermentation, periodic punch-downs of the cap were performed to facilitate the efficient extraction of soluble compounds. Fermentation was carried out at a controlled temperature of 25°C. The total maceration time was 10 days.

Upon completion of maceration, the wine was separated from the marc using a basket press and transferred for completion of alcoholic fermentation. After fermentation, the wine was racked to separate it from the yeast lees, treated with 50 *mg/dm<sup>3</sup>* of sulfur dioxide, and placed under resting conditions.

The physicochemical parameters of the wines produced from the Sev Areni variety and its Clone No. 9 were analyzed in accordance with OIV and EAEU GOST methodologies. Color characteristics were determined using a UNICO 2802 UV/VIS spectrophotometer at wavelengths of 420, 520, and 620 *nm*, using a cuvette with a path length of 1 *cm* [21,22].

**Results and discussion.** It is well known that the wine quality is directly related to the quality of the grapes used in its production. Therefore, the quality and characteristics of the wine must be directly linked to the chemical composition of the grapes [23, 24].

Within the framework of this study, a comparative evaluation was carried out on the physicochemical parameters of wines produced from the Sev Areni variety and its Sev Areni Clone No. 9, with the aim of revealing the impact of clonal selection on the wine quality characteristics.

The harvested grapes showed the following physicochemical parameters: For the Sev Areni variety, the sugar content was 18.3%, while in Clone No. 9, it was 17.6%. The titratable acidity was 5.12 *g/L* and 4.57 *g/L*, respectively, and the pH values were 3.58 for Sev Areni and 3.71 for Clone No. 9.

Table

*Physicochemical parameters of the wines*

Parameters	Unit of measurement	Wine	
		Sev Areni	Areni Clone No. 9
Alcoholic strength	%	11.1±0.2	10.7±0.2
Total acidity	g/l	3.98±0.02	4.70±0.02
(pH)	-	3.75±0.015	3.70±0.015
Reducing sugar	g/l	0.15±0.015	0.15±0.015
Volatile acidity	g/l	0.68±0.02	0.42±0.02
Aldehydes	mg/l	23.76±0.01	24.64±0.01
Acetals	mg/l	30.68±0.02	35.4±0.02
Free SO <sub>2</sub>	mg/l	7.36±0.25	8.32±0.25
Total SO <sub>2</sub>	mg/l	31.36±0.3	32.0±0.3
Reductions SO <sub>2</sub>	mg/l	3.84±0.21	4.48±0.21
Total Phenols	mg/l	646.84±4.5	541.14±4.5

The results obtained indicate that the wine musts from Sev Areni and Sev Areni Clone No. 9 exhibit similar physicochemical properties; however, there are some notable differences that may influence the quality, storage stability, and sensory characteristics of the wines.

Alcohol content: The Sev Areni sample contains 11.1% ethanol by volume, while Clone No. 9 has 10.7%. This difference in alcohol content may be attributed to varying levels of grape ripeness.

Both samples have minimal residual sugar content (0.15 g/dm<sup>3</sup>), which is characteristic of dry wines. The data on active acidity (pH) and titratable acidity indicate that both wines have nearly comparable acid balances: pH values of 3.75 and 3.70, and titratable acidity of 3.98 g/dm<sup>3</sup> and 4.70 g/dm<sup>3</sup>, respectively. These parameters contribute to the biochemical stability of the wine, as well as its perceived freshness. Based on these results, it can be concluded that Clone No. 9 is more suitable for producing light red and rosy wines.

A significant difference is observed in volatile acidity: Sev Areni contains 0.68 g/dm<sup>3</sup>, whereas Clone No. 9 contains 0.42 g/dm<sup>3</sup>. The relatively low content of volatile acids in Clone No. 9, likely related to its chemical composition, may be considered one of its distinctive features.

The total and free sulfur dioxide contents in both samples comply with international standards, not exceeding the permissible limits. Free sulfur dioxide is slightly higher in Clone No. 9 (8.32 mg/dm<sup>3</sup>), which may ensure better storage stability. The higher content of reductants (4.48 mg/dm<sup>3</sup>) also indicates a higher level of antioxidant protection, preventing wine oxidation.

Clone No. 9 also shows slightly higher concentrations of both aldehydes and acetals, which may be related to the characteristics of the grapes and fermentation process. These compounds can impart structure, smoothness, and a developed aroma to the wine, particularly acetals.

A significant difference is observed in total phenolic content: Sev Areni contains 646.84 mg/dm<sup>3</sup>, while Clone No. 9 contains only 541.14 mg/dm<sup>3</sup>. Phenolic compounds play a critical role in color stability, antioxidant properties, and tannin structure formation in wine. The lower phenolic content suggests that Clone No. 9 is more suitable for producing lighter red and rosy wines.

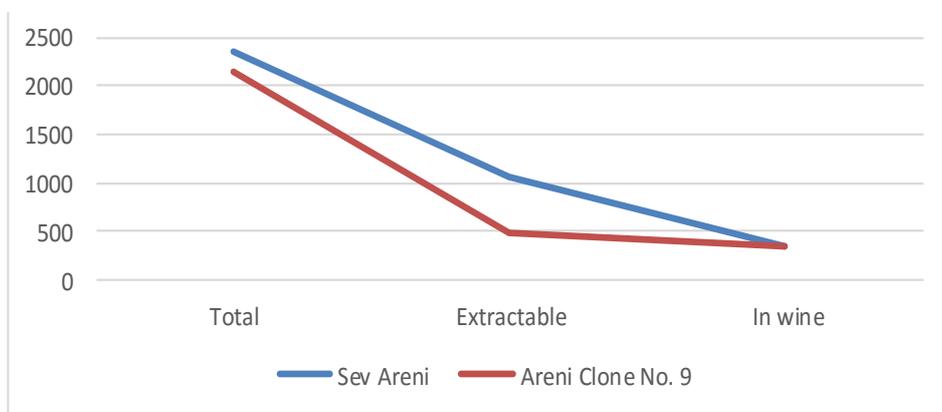


Fig. 1. Phenol content in the fruit juice–wine system of Sev Areni variety and Areni Clone No. 9 (mg/l)

Figure 1 shows that the data indicate that both the Sev Areni variety and Areni Clone No. 9 samples exhibit significant differences in total flavonoid content, with the parent variety showing a higher amount. However, the results suggest that the flavonoids in the Sev Areni variety tend to precipitate, as the final flavonoid content in the wines is almost equal. The total flavonoid content in Sev Areni was 2354.3 mg/dm<sup>3</sup>, whereas in Clone No. 9 it was 2153.6 mg/dm<sup>3</sup>. This indicates that the parent variety is potentially richer in polyphenolic compounds, but during the technological process, the decline in flavonoid content is more pronounced in the Sev Areni variety.

The flavonoid content remaining in the wine musts was relatively similar, at 340.60 mg/dm<sup>3</sup> in the parent variety and 339.56 mg/dm<sup>3</sup> in Clone No. 9. This demonstrates that the retention of flavonoid compounds in the final winemaking product-the wine-is related to varietal characteristics.

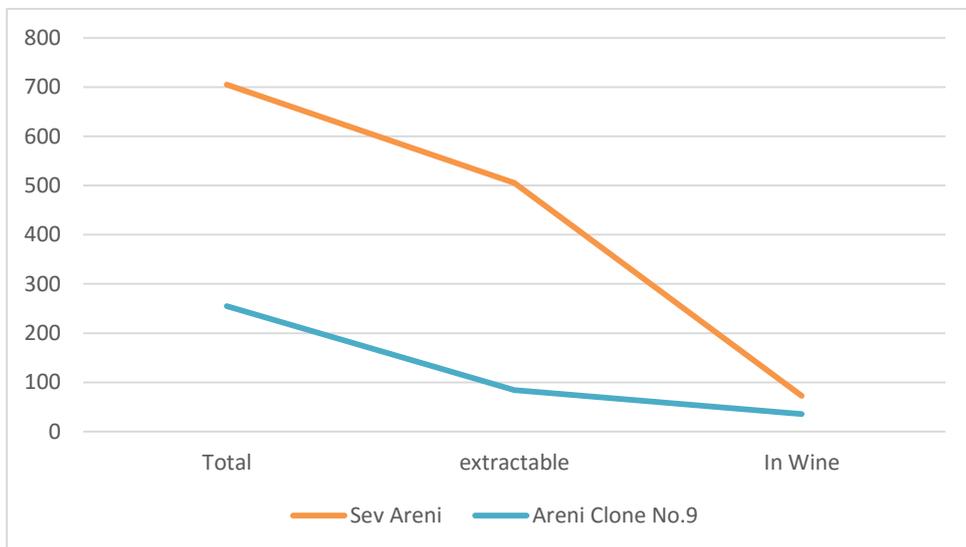
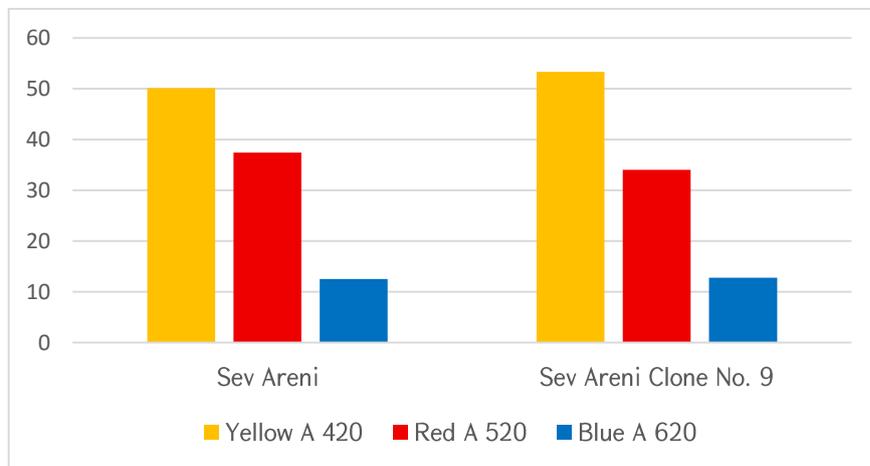


Fig. 2. Anthocyanin content in the fruit juice-wine system of Sev Areni Variety and Areni Clone No. 9 (mg/l)

As shown in Figure 2, the total anthocyanin content in the Sev Areni sample was  $705.13 \text{ mg/dm}^3$ , whereas in Areni Clone No. 9, it was  $254.60 \text{ mg/dm}^3$ . These data indicate that the parent variety is approximately three times richer in pigment compounds, which significantly contributes to the intense coloration of the resulting wine. This difference is genotypic and may also be attributed to variations in grape skin structure, the intensity of pigment synthesis, and the mechanisms of pigment accumulation.

The extractable anthocyanin content in the Sev Areni sample was  $505.06 \text{ mg/dm}^3$ , while in Clone No. 9, it was only  $83.97 \text{ mg/dm}^3$ . This indicates that not only does Sev Areni have a higher total anthocyanin content, but these pigments are also more readily released into the must during crushing. This may also reflect a higher solubility of the skin pigments in the parent variety.

The anthocyanin content in the wine must was again higher in Sev Areni-  $72.40 \text{ mg/dm}^3$ , compared to  $35.33 \text{ mg/dm}^3$  in Clone No. 9. Although a significant portion of anthocyanins is degraded or transformed into more stable pigments during winemaking, the rich pigment composition of the initial raw material allows for the production of wines with stable color and strong organoleptic properties. In contrast, Clone No. 9 may be more suitable for the production of lighter red and rosy wines.



*Fig. 3. Color composition, %*

Figure 3 shows that the red component, which is determined by anthocyanins and serves as a key indicator of a wine's freshness and brightness, is higher in the Sev Areni sample-37.44%, whereas in Clone No. 9, it is 34.0%. This indicates that Sev Areni wine possesses a more vivid red hue, which is more typical of young and fresh wines.

Overall, the analysis of the color composition demonstrates that Sev Areni wine exhibits a deeper red coloration, while the wine produced from Sev Areni Clone No. 9 is characterized by a lighter red color.

**Conclusion.** The results of the study revealed that both the Sev Areni parent variety and Clone No. 9 demonstrate oenological potential, yet they exhibit different technological orientations. Sev Areni is characterized by a higher alcohol content, a greater concentration of phenolic and anthocyanin compounds, and an intense red color, all of which contribute to the production of deeply colored, structured, and full-bodied red wines.

In contrast, Areni Clone No. 9 displays a milder phenolic profile, lower volatile acidity, and higher storage stability, making it more suitable for the production of light red and rosy wines.

The data obtained confirm the significant impact of clonal selection on shaping wine quality and typicality. These findings play an important role in the technological valorization of local grape varieties and the stylistic diversification of Armenian wines, supporting the sustainable development of Armenia's winemaking sector based on scientific foundations.

## References

1. Magarach Ya. Yalanetskly, N.A. Ganay, G.V. Taran, M.N. Borisenko, et al // Viticulture winemaking.-2011. 3.-P. 21-23.  
[https://elibrary.ru/download/elibrary\\_23577190\\_27956826.pdf](https://elibrary.ru/download/elibrary_23577190_27956826.pdf)
2. Kotolovets Z.V., Yermolin D.V., Yermolina G.V., Magarach// Viticulture and winemaking.-2017.-3.-P.16-17.  
[https://elibrary.ru/download/elibrary\\_30016935\\_49292275.pdf](https://elibrary.ru/download/elibrary_30016935_49292275.pdf)
3. Kotolovets Z.V., Yermolin D.V., Yermolina G.V. Magarach// Viticulture and winemaking.-2017.-4.-P.8-10.  
[https://elibrary.ru/download/elibrary\\_30728765\\_97264077.pdf](https://elibrary.ru/download/elibrary_30728765_97264077.pdf)
4. Catastrophic unbalanced genome rearrangements cause somatic loss of berry color in grapevine P. Carbonell-Bejerano, C. Royo, R. Torres-Pérez, et al. // Plant Physiology.-2017.-175.-P. 786–801.
5. et al., Grapevine genetics after the genome sequence: Challenges and limitations J.M.M. Martínez-Zapater, M.J.J. Carmona, J. Díaz-Riquelme // Aust. J. Grape Wine Res.-2010.-16.-P. 33–46.
6. Anderson M.J., Smith R.J., Williams M.A., & Wolpert J.A. Viticultural Evaluation of French and California Pinot noir Clones Grown for Production of Sparkling Wine// American Journal of Enology and Viticulture.-2008.-59(2). P.188-193.
7. Doneva S., Ivanova V., Stafilov T., & Stefova. M. Comparison of three Chardonnay clones (*Vitis vinifera* L.) growing in Skopje vineyard region, R. Macedonia// Agroznanje.-2013.-4(6).-P.1143–1147.  
<https://doi.org/10.7251/AGREN1201095D>
8. Santesteban L.G., & Royo J.B. Water status, leaf area and fruit load influence on berry weight and sugar accumulation of cv. 'Tempranillo' under semiarid conditions// Scientia Horticulturae. -2006.-109.-P.60–65.  
<https://doi.org/10.1016/j.scienta.2006.03.002>
9. Armanino C., Casolino M.C., Casale M., Forina M., Modelling aroma of three Italian red wines by headspace-mass spectrometry and potential functions// Anal. Chim. Acta.-2008.-614.-P.134–142.  
<https://doi.org/10.1016/j.aca.2008.02.063>
10. Effect of leaf removal on grape yield, berry composition and stilbene concentration L. Bavaresco, M. Gatti, S. Pezzutto, et al. // Am. J. Enol. Vitic. -2008.-59.-P.292–298.
11. , Abiotic stresses differentially affect the expression of O-methyltransferase genes related to methoxypyrazine biosynthesis in seeded and parthenocarpic fruit of *Vitis vinifera* (L.). J.G. Vallarino, F. Gainza-Cortés, C. Verdugo-Alegría, et al. // Food Chem. 2014. 154. P. 117–126.  
<https://doi.org/10.1016/j.foodchem.2013.12.103>

12. **Torrens J., Riu-Aumatell M., López-Tamames E., Buxaderas S.** Volatile compounds of red and white wines by headspace-solid-phase micro-extraction using different fibers// *J. Chromatogr. Sci.*-2004.-42.-P.310–316.  
<https://doi.org/10.1093/chromsci/42.6.310>
13. **Sabon I., de Revel G., Kotseridis Y., Bertrand A.,** Determination of volatile compounds in Grenache wines in relation with different terroirs in the Rhone Valley// *J. Agric. Food Chem.*-2002.-50.-P.6341–6345.  
<https://doi.org/10.1021/jf0203811>
14. Influence of vineyard location and vine water status on fruit maturation of nonirrigated cv. Agiorgitiko (*Vitis vinifera* L.): Effects on wine phenolic and aroma components/ **S. Koundouras, V. Marinos, A. Gkoulioti, et al** // *J. Agric. Food Chem.*-2006.-54.-P.5077–5086.  
<https://doi.org/10.1021/jf0606147>
15. Influence of vineyard altitude on Glera grape ripening (*Vitis vinifera* L.): Effects on aroma evolution and wine sensory profile/**M. Alessandrini, F. Gaiotti, N. Belfiore, F. Matarese, et al** // *J. Sci. Food Agric.*-2017.-97.-P.2695–2705.  
<https://doi.org/10.1002/jsfa.8115>
16. **Esti M., Tamborra P.** Influence of winemaking techniques on aroma precursors// *Anal. Chim. Acta.* -2006. -563. -P. 173–179.  
<https://doi.org/10.1016/j.aca.2006.01.041>
17. Towards the creation of a wine quality prediction index: Correlation of Chardonnay juice and wine compositions from different regions and quality levels **J.M. Gambetta D. Cozzolino S.E.P. Bastian, et.al** // *Food Anal. Methods.* -2016. -9. - P. 2842–2855.  
<https://doi.org/10.1007/s12161-016-0614-6>
18. **Smith P.** Assessment of relationships between grape chemical composition and grape allocation grade for Cabernet Sauvignon, Shiraz and Chardonnay// *Aust. N. Z. Grapegrower Winemaker.*-2015.-620.-P. 30–32.
19. **Longbottom M., Simos C., Krstic M., Johnson D.** Grape quality assessments: A survey of current practice // *Wine Vitic. J.* -2013. -28. -P. 33–37.
20. **Waterhouse A.L., Sacks G.L., Jeffery D.W.** *Understanding Wine Chemistry.* Wiley. -2016.  
<https://www.wiley.com/enus/Understanding+Wine+Chemistry%2C+2nd+Edition-p-9781118872612>
21. **Kennedy J.A., Matthews M.A.** Grape and Wine Phenolics: Their Role in Quality and Stability // *Am. J. Enol. Vitic.* -2013. -64(2). -P. 153–164.  
<https://www.ajevonline.org/content/64/2/1>
22. **OIV,** *Compendium of International Methods of Wine and Must Analysis.* -OIV Publ., Paris. -2018.  
<https://www.oiv.int/public/medias/6376/oiv-compendium-2018-en.pdf>

23. **Somers T.C.** The polymeric nature of wine pigments// *Phytochemistry*. -1971. 10(9). -P. 2175–2186.  
[https://doi.org/10.1016/S0031-9422\(00\)85118-7](https://doi.org/10.1016/S0031-9422(00)85118-7)
24. **Jackson R.S.** *Wine Science: Principles and Applications*. -4th ed. -Academic Press, London, 2014.  
<https://www.elsevier.com/books/wine-science/jackson/978-0-12-381468-1>

*Received on 03.09.2025.*

*Accepted for publication on 10.09.2025.*

**«ՄԵՎ ԱՐԵՆԻ» ՏԵՄԱԿԻ ԵՎ «ԱՐԵՆԻ ԿԼՈՆ N°9»-Ի ՏԵԽՆՈԼՈԳԻԱԿԱՆ  
ՊՈՏԵԼՑԻԱԼՆԵՐԻ ՀԱՄԵՄԱՏԱԿԱՆ ՈՒՍՈՒՄՆԱՍԻՐՈՒԹՅՈՒՆ**

**Ա.Կ. Սոլոմոնյան**

Վերլուծվել են «Սև Արենի» խաղողի տեսակիցից և նրա «Կլոն N°9»-ից ստացված կարմիր անապակ գինիների ֆիզիկաքիմիական և գունային ցուցանիշները՝ նպատակ ունենալով գնահատելու կլոնային տարբերակների ազդեցությունը գինու որակի վրա: Նման մոտեցումը կարևոր է, քանի որ նույնիսկ մեկ և նույն ավանդական տեսակի ներսում կլոնային տարբերակները կարող են էականորեն փոխել ինչպես քիմիական բաղադրությունը, այնպես էլ գինու զգայական և տեխնոլոգիական հատկանիշները: Գինին ստացվել է միկրոգինեգործության պայմաններում՝ նույն տեխնոլոգիական գործընթացներով, ինչը հնարավորություն է տվել բացառել արտաքին գործոնների ազդեցությունը և հստակորեն առանձնացնել տեսակային և կլոնային տարբերությունների դերը: Այս համեմատական ձևաչափը հնարավորություն է տալիս առավել հստակ հասկանալու, թե ինչպիսի ազդեցություն ունի գենետիկական և կլոնային բազմազանությունը վերջնական արտադրանքի որակի վրա: Վերլուծությունները կատարվել են OIV և ԵՍՍՄ ԳՕՍՄ մեթոդներով՝ ներառելով էթիլ սպիրտի, ընդհանուր և ցնդող թթվության, ծծմբային միացությունների, ինչպես նաև ֆենոլային և պիզմենտային միացությունների քանակական որոշումներ: Լրացուցիչ ուսումնասիրվել են գույնի ինտենսիվությունը և երանգը, ինչը հնարավորություն է տվել՝ ստանալու առավել ամբողջական պատկեր գինիների գունային բնութագրերի մասին:

Արդյունքները ցույց են տվել, որ «Սև Արենի» մայր տեսակից ստացված գինիները պարունակում են ավելի բարձր ալկոհոլ, անտոցիաններ և ընդհանուր ֆենոլներ, ինչը ապահովում է ավելի ինտենսիվ գունավորում, հարուստ կառուցվածք և ավելի մեծ պոտենցիալ՝ պահման ու հնեցման համար: «Կլոն N°9»-ից ստացված գինիները, իրենց հերթին, բնութագրվում են ավելի մեղմ ֆենոլային բաղադրությամբ, ցածր ցնդող թթվությամբ և բարձր հակաօքսիդանտային պաշտպանվածությամբ, ինչը դրանք ավելի նպատակահարմար է դարձնում թեթև կարմիր և վարդագույն գինիների արտադրության համար: Ուսումնասիրությամբ շեշտադրվում է կլոնային ընտրության դերը գինու որակի և

սեխնորգիական ուղղվածության ձևավորման գործընթացում՝ ցույց տալով, որ ճիշտ ընտրված կլոնները կարող են նպաստել արտադրանքի բազմազանությանը, շուկայի պահանջներին համապատասխանեցմանը և բարձր որակի կայուն պահպանմանը:

**Առանցքային բաներ.** «Սև Արենի», «Արենի **Վլոն** №9», գինի, խաղողի տեսակ, կլոնային ընտրություն:

## СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ ТЕХНОЛОГИЧЕСКОГО ПОТЕНЦИАЛА СОРТА “СЕВ АРЕНИ” И КЛОНА “АРЕНИ №9”

**А.К. Соломония**

В данном исследовании анализируются физико-химические и колориметрические показатели красных сухих вин, полученных из винограда сорта “Сев Арени” и его клон “№9”, с целью оценки влияния клональных различий на качество вина. Такой подход имеет особое значение, поскольку даже внутри одного и того же традиционного сорта клональные вариации могут существенно изменять как химический состав, так и органолептические и технологические характеристики вина. Вино было произведено в условиях микровинификации с использованием одинаковых технологических процессов, что позволило исключить влияние внешних факторов и выделить именно роль сортовых и клональных различий. Такой экспериментальный дизайн обеспечивает достоверность выводов и позволяет более чётко понять, каким образом генетическое и клональное разнообразие отражается на конечном качестве продукта. Анализы проводились по методикам OIV и ЕАЭС ГОСТ, включая количественное определение этилового спирта, общей и летучей кислотности, соединений серы, а также фенольных и пигментных соединений. Дополнительно исследовались показатели интенсивности окраски и оттенка, что дало возможность получить более полное представление о колориметрических характеристиках вин.

Результаты показали, что вина из материнского сорта “Сев Арени” содержали более высокие уровни алкоголя, антоцианов и общих фенолов, обеспечивающих насыщенный цвет, плотную структуру и большой потенциал для выдержки. Вина из клон “Арени №9” имели более мягкий фенольный профиль, низкую летучую кислотность и повышенную антиоксидантную защиту, что делает их подходящими для производства лёгких красных и розовых вин. Таким образом, исследование подчёркивает важную роль клонального отбора в формировании качества вина и технологической направленности, демонстрируя, что правильный выбор клонов способен расширить ассортимент и повысить стабильность продукции.

**Ключевые слова:** Сев Арени, клон Арени №9, вино, сорт винограда, клональный отбор.