THE NATURE OF CORRELATION BETWEEN PRODUCTION FACTORS AND VITICULTURE DEVELOPMENT OF ARMENIA

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Introduction: Viticulture is one of the most important branches of the RA agricultural sector. The main features of the RA viticulture branch are:

- The provision of raw materials for wine and brandy production. The development of viticulture is inextricably linked with these two production sectors.
- Viticulture is a relatively labor-intensive branch of agricultural production. Thanks to that, it provides a high demand for labor in rural areas. Consequently, the development of viticulture is strongly helping to prevent the high rate of migration from rural areas and to increase the living standards of the rural population.
- The costs of establishing vineyards start to be repaid in the 3-4th year of their establishment. With right cultivation, a high income per hectare can be obtained. In addition, compared to other agricultural products, the yield of grape is higher per hectare; the grapes do not have a pronounced period of fruiting, which results in a balanced harvest under equal conditions in different years.
- The table varieties of grape are highly storable and are mainly exported. Due to its good taste and high quality features, Armenian grapes are in great demand in foreign markets.

Given these circumstances, the development of viticulture should be among the priorities of the Government regulations. In addition, the study and monitoring of the sector should be done regularly. Despite existing preconditions, the current state of viticulture cannot be unequivocally considered as sustainable development. Despite the existing preconditions for development, the current state of viticulture cannot be considered as a stable.

The main purpose of this article is to assess the impact of production factors on the development of the viticulture industry. **The following problems** have been resolved within the framework of the article.

- The dynamics of the productivity indicators of the viticulture sector has been studied.
- The situation in viticulture production means market and their price level were studied.
- The prerequisites for the development of viticulture and possible existing obstacles were discussed.

The relevance of the topic lays in the fact that the field is not sufficiently researched. There are not any studies that assess the issues mentioned above.

Literature review: The assessment of the state of viticulture development presupposes the classification of the factors affecting viticulture and obtaining correct definition of the nature of that impact. In the scientific literature, it is customary to group the main factors influencing grape production in the following way:

- Economic factors and conditions,
- Technical-technological conditions,
- Natural conditions and agro-resource complex,
- Culture-technical characteristics of employees.

In this research, however, we consider it more appropriate to classify these factors in the following way.

- Market related factors,
- Production related factors,
- Political factors.

The market related factors are.

- The marketability level of grape,
- The average selling prices,
- Market situation: the relationship between supply and demand in grape market,
- Level of development of grape processing branches. In particular, we refer to the volumes of brandy and wine production, the change in their export volumes, their price level. In other words, these are the factors whose change can affect the change in demand in the grape market, which will have an impact on the development of viticulture,
- Conditions of grape storage, transportation, procurement infrastructures, their provision, etc.

The production related factors include:

- Climatic conditions,
- Provision of land and water resources,
- Provision of labor resources,
- State of supply in the market of means of production. In particular: availability of mineral and organic fertilizers, pesticides, agriculture tools and materials, agro machinery, etc. Besides the physical availability and quality of these factors, another very important factor here is the changes in prices of these factors. The changes in prices of production factors directly affect the per-unit cost of grapes. If it is not combined with the increase in the selling price of grapes then the constant rise in the price of production factors will lead to a decrease in the profitability of grapes, which will definitely have a negative impact on the attractiveness of the viticulture sector.
- The state of development of production infrastructure,
- The size of the organization,
- Level of professional knowledge of farmers, etc.

Political factors refer:

- The military-political situation of the country,
- Export opportunities,
- State agrarian policy of the government, etc.

The above-mentioned factors can either be an opportunity for the viticulture development or, on the other hand, be an obstacle. Therefore, it is very important to evaluate them, and use obtained results to map out the development of viticulture.

There are very few new and up to date studies aimed to assessing the development of viticulture in RA. One particular study refers to the problems of viticulture development in Vayots Dzor region. According to the results of the SWOT analysis carried out in that research:

- There are a number of complications and difficulties related to the process of selling grapes in Vayots Dzor region.
- Studies show that about 70% of the grapes produced in the studied region are procured by processing companies in the coastal zone, which has a negative impact on the level of grape production productivity in the region.
- In addition to the above factors, the marketability level of grapes, particularly table grapes, is strongly affected by storage processes and conditions.
- The development of viticulture in the region is significantly hindered by the very small size of the vineyards of the grape-producing farms. The small size does not allow for efficient management, proper implementation of production and economic activities¹.

Thus, the problems of viticulture development in Vayots Dzor are related to market factors, as well as to the small sizes of farms.

The decline of viticulture in Armenia after independence is characterized by the following main reasons:

- Sharp reduction of procurement by processing companies,
- Extremely low level of purchase prices,
- Decrease in the degree of mechanization due to difficulties in obtaining agricultural machinery,
- High capital investments required to establish new vineyards, etc.².

Currently, the situation is relatively stable due to the partial solution of sales problems and development of processing industry.

In the context of the development of viticulture in the Republic of Armenia, the use of intensive technologies is prioritized. A vivid example for this is the intensive vineyards established in Armavir region, RA, where up to 3788 grape plants can be planted on 1 hectare (in case of traditional cultivation only 2666 grape plants), as a result of the application of intensive technologies. Thanks to that, higher economic

¹Aleksanyan V., Tamoyan H., The economic conditions of Vayots Dzor region and their contribution to the development of viticulture (original in Armenian), " Alternative" scientific journal, 2019

² Economic analysis of the state of viticulture in the Republic of Armenia (original in Russian), Agrarian economy of Russia: problems and vectors of development, monograph, scientific editor Doctor of Economics, Professor A. I. Trubilin, 2018, p. 87

efficiency will be ensured per unit area. It is important to note that some researchers, studying the growth rates of viticulture of their time (2013), have made a forecast for 2015-2020 viticulture development. According to that forecast, the vineyard areas should have reached 33.0 thousand hectares in 2020¹, but in 2020, the vineyard areas were only 16.7 thousand hectares². This clearly indicates that there are problems in the field that are not fully identified or the impact of some factors and their nature is only partially taken into account. In the same study, it is noted that there is a serious problem with the ratio of product prices in the viticulture sector. In particular, the wholesale prices of the grape decreased by 15% in 2005-2009. In that research the further development of viticulture is conditioned not so much by internal as by external circumstances, which refer to the application of new production technologies and cultivating new grape varieties. It is also important to develop the cooperation processes in viticulture complex, where more than 50 thousand small farms operate³. Foreign researches related to our topic state that main factors that positively affect the economic performance of grape production are the improvement of product quality, greater attention to aspects of marketing and the improvement of the management efficiency of the grape growers⁴.

There are number of researches that refer to the effects of climatic changes on viticulture. According to such researches, the current global warming has a pronounced impact on the viticulture complex⁵. For example in Denmark and Sweden, global warming will cause changes in geographical distribution of the wine-growing regions. That is, because of global warming, favorable conditions will be created in the countries and regions with previously unfavorable conditions for viticulture⁶⁷. In the context of climate change in Europe the vineyard areas will move to the northern regions after 2050 and the southern regions, which currently have favorable

¹ Bayadyan A., The problems of the development of the agricultural production of the Republic of Armenia and the ways of their solution (original in Armenian), 2013, p. 58-59

² Source – Statistical Committee of Republic of Armenia, Publications, "Sown Areas of Agricultural Crops, Planting Area of Permanent Crops, Gross Harvest and Average Crop Capacity for 2020"; <u>https://www.armstat.am/file/article/29_gt_2020.pdf</u>, p. 74

³ Bayadyan A., The problems of the development of the agricultural production of the Republic of Armenia and the ways of their solution (original in Armenian), 2013, p. 60-61

⁴ Gioacchino Pappalardo, Attilio Scienza, Gabriella Vindigni & Mario D'Amico (2012): Profitability of wine grape growing in the EU member states, Journal of Wine Research, DOI:10.1080/09571264.2012.724392.

⁵ Chevet, J.-M., Lecocq, S., & Visser, M. (2011). Climate, Grapevine Phenology, Wine Production, and Prices: Pauillac (1800–2009). American Economic Review, 101(3), 142–146. doi:10.1257/aer.101.3.142. Ashenfelter, O., Storchmann, K. Measuring the Economic Effect of Global Warming on Viticulture Using Auction, Retail, and Wholesale Prices. Rev Ind Organ 37, 51–64 (2010). https://doi.org/10.1007/s11151-010-9256-6.

⁶ Bentzen, Jan & Smith, Valdemar. (2009). Wine production in Denmark Do the characteristics of the vineyards affect the chances for awards?. University of Aarhus, Aarhus School of Business, Department of Economics, Working Papers.

⁷ Rytkönen, Paulina. (2013). Sweden – an emerging wine country – a case of innovation in the context of the "new rurality". Spanish Journal of Rural Development. 79-88. 10.5261/2013.GEN4.08.

conditions, will no longer be eligible for viticulture¹. There are not any studies that assess the impact of climate change on the development of viticulture in RA. However, if we apply the logic provided by the above-mentioned researches, then with the warming of the climate, the lands suitable for viticulture in Armenia can be expanded. Because of global warming, the weather conditions in the foothill regions of RA will become favorable for viticulture. The main viticulture regions of the RA are the Ararat valley, the foothills of Vayots Dzor, Tavush and Aragatsotn regions. We assume that in the future the foothills of Kotayk, Shirak and Gegharkunik will have favorable conditions for viticulture. In Portugal, overall efficiency of viticulture organizations mainly depends on the geographical area, the farmers' vineyards size, the training system of farmers and farmers' interactions². According to researches carried out in Poland, there is no specific predominant social, economic or climatic factor, which will affect the development of the viticulture, but it is noteworthy that behavioral factors of the people play a big role there³. The size of organization can have a considerable impact on the development potential and efficiency of viticulture. In Italy, the size of the organization has a positive effect on its economic efficiency. The sizes of the organization and its profitability have positive and statistically significant correlation there⁴. In France, however the size of organization has relatively small impact on the economic efficiency of grape growers. The differences in the profitability of the companies in the viticulture are mostly conditioned by the selling prices of the wine⁵.

Methodology: In the scope of this research, comparative, descriptive, economicstatistical, comparative-analytical methods were used and implemented. Firstly, the previous scientific researches in the field of viticulture of the RA were studied, and then the works of foreign researchers were reviewed. The peculiarities of viticulture development in RA were assessed using the economic-mathematical method; the obtained results were analyzed and summarized.

Discussion: The unstable economic situation after the collapse of the USSR, the Artsakh war and independence left their negative effects on the viticulture complex. Difficulties in exporting wine and brandy led to stagnation of raw materials. As a result, vineyards began to be demolished. As a result, if in 1990 the total area of

¹ Tóth, J. P., & Végvári, Z. (2015). Future of winegrape growing regions in Europe. Australian Journal of Grape and Wine Research, 22(1), 64–72. doi:10.1111/ajgw.12168.

² Santos, M. Q. dos, Rodríguez, X. A., & Marta-Costa, A. (2020). Efficiency analysis of viticulture systems in the Portuguese Douro region. International Journal of Wine Business Research, 32(4), 573–591. doi:10.1108/ijwbr-10-2019-0052.

³ Czupryna, Marcin, Oleksy, Paweł, Przybek, Piotr and Kamiński, Bogumił (2018) 'Agent-Based Modelling of Viticulture Development in Emerging Markets: The Case of the Małopolska Region' Journal of Artificial Societies and Social Simulation 21 (3) 6. doi: 10.18564/jasss.3726.

⁴ Sellers, R., & Alampi-Sottini, V. (2016). The influence of size on winery performance: Evidence from Italy. Wine Economics and Policy, 5(1), 33–41. doi:10.1016/j.wep.2016.03.001.

⁵ Delord, B., Montaigne, É., & Coelho, A. (2015). Vine planting rights, farm size and economic performance: Do economies of scale matter in the French viticulture sector? Wine Economics and Policy, 4(1), 22–34. doi:10.1016/j.wep.2015.03.001.

vineyards was 29.2 thousand hectares, in 1996 it was reduced to 21.9 thousand hectares and in 2020 it was only 16.68 hectares. In the late 1990s, when the economic situation in Armenia was gradually stabilizing, the brandy and wine production branches began to develop. There was stabilization in the viticulture industry as well. The dynamics of vineyard areas, though, did not follow to the same pattern. On the contrary, the development of the viticulture remains very unstable. In Figure 1 and 2 presented the dynamics of gross grape harvest and vineyard areas from 1993-2020 (Figure 1, Figure 2).



Figure 1. The dynamics of Vineyard areas in RA 1993-2020.



Figure 2. The dynamics of Gross grape harvest in RA $1993-2020^2$.

¹ Source; Statistical Committee of Republic of Armenia. (2022). "Sown Areas of Agricultural Crops, Planting Area of Permanent Crops, Gross Harvest and Average Crop Capacity for 1993-2020" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82</u> (date of access; 15.02.2022)

² Source; Statistical Committee of Republic of Armenia. (2022). "Sown Areas of Agricultural Crops, Planting Area of Permanent Crops, Gross Harvest and Average Crop Capacity for 1993-2020" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82</u> (date of access; 15.02.2022)

The graphs indicate that the vineyard areas have not reached their initial level and the indicator of vineyard areas does not have a stable growth trend. The line that represents the dynamics of vineyard areas has an oscillating nature, that is, it first increases and then decreases, and then increases again, then decreases. This means that because of impact of some factors, farmers decide to demolish their vineyards and start producing grapes again after a few years. The gross harvest has a relatively more stable growth, but that is mainly a result of the increase in the average yield indicator.

The increase of average yield in Armenia indicates that the performance of grape producing farms has improved, the work on fertilizing, diseases and pest control activities has been carried out more effectively, which has led to an increase in the average yield. It turns out that the increase in the gross grape harvest during the studied period (1993-2020) is mostly a result of the increase in the average yield level.

Figures 4 and 5 show that the dynamics of wine and brandy production is characterized by steady rapid growth especially in the last decade. Such a situation theoretically implies a positive impact on the development of viticulture. As the increase in production for wine and brandy implies an increase in demand for grape, which is an incentive to increase orchards and increase the average yield. However, the development rates of viticulture, as mentioned above, do not have a stable growth trend. Thus, we can state that there is a gap between the development of viticulture in RA and its related branches (wine and brandy production). The latter can be conditioned by many factors. These factors are numerous, starting from the militarypolitical conditions of the Republic of Armenia, the state agrarian policy, ending with the changes in prices and supply in the market of product means.



Figure 3. The dynamics of the volume of wine production in RA 2001-2020.

¹ Source; Statistical Committee of Republic of Armenia. (2022). "Output of Main Commodities in the Industrial Organizations (in Kind) for January-December 2001-2020 (Armenian)" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82&cid=2369</u> (date of access; 25.02.2022)



Figure 4. The dynamics of the volume of brandy production in RA 2001-2020¹.

In the framework of the research, we will pay special attention to assessing the impact of production related factors on the development of the viticulture industry. In particular, the situation in the market of industrial agricultural products and services in the field of agricultural machinery were studied. In order to ensure the normal course of viticulture, it is very important to ensure production factors such as organic-mineral fertilizers, pesticides, etc. These are the main preconditions without which it is impossible to run the right agricultural machinery. The increase in the average yield of grapes in RA clearly indicates that over the years the quality of grape cultivation has improved. Agricultural activities were done more properly, which led to an increase in yields. In general, the state of logistical support of the agricultural sector in Armenia cannot be considered satisfactory. Agricultural products and machinery are mainly imported, there is no local production. Added to this is the fact that in some cases the quality of those products is questioned. There are many cases when the pesticides purchased by farmers do not have the intended effect, as a result of which not only the farmer incurs excessive costs but also the crop suffers a quantity and quality damage.

There is another problem related with ago-products and agro-machinery services. The problem refers to their price dynamics in comparison with selling prices of grape. Figures 5 and 6 present the dynamics of average prices for mineral fertilizers, pesticides, services provided by agricultural machinery and prices of grapes.

¹ Source; Statistical Committee of Republic of Armenia. (2022). "Output of Main Commodities in the Industrial Organizations (in Kind) for January-December 2001-2020 (Armenian)" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82&id=2369</u> (date of access; 25.02.2022)



Figure 5. The dynamics of average prices of grape and mineral fertilizers in RA 1997-2020¹.



Figure 6. The dynamics of average prices and tariffs of grape and production related factors in RA 1997-2020².

Graphs highlight that in 1997-2020, the prices of agricultural products, services provided by agricultural machinery showed a steady growth trend. The latter is the

¹ Source; Statistical Committee of Republic of Armenia. (2022). "Prices and Prices Indexes in the Republic of Armenia, 1997-2020" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82&id=2284</u> (date of access; 17.02.2022)

² Source; Statistical Committee of Republic of Armenia. (2022). "Prices and Prices Indexes in the Republic of Armenia, 1997-2020" online database. Retrieved from: <u>https://www.armstat.am/en/?nid=82&id=2284</u> (date of access; 17.02.2022)

logical expression of inflation in the country's economy. Rising prices over the years is a normal process; it presupposes an adequate change in the selling price of grapes too. However, the average selling prices of grapes do not have a stable growth trend. On the contrary, their sharp decline was observed in some years. This situation is problematic because the increase in the prices of production factors leads to an increase in the perunit cost of grapes, but it is not accompanied by an increase in prices. As a result grape growers' profits decline, which leads to a decrease in the attractiveness of the sector, while at the same time affecting negatively on the development of viticulture.

In this case, the economic thinking suggests that such a rise in production factors' prices will have a negative impact on productivity of grape growers. That is, it is assumed that the gross grape harvest or vineyard areas may decrease as prices of production factors rise. In order to quantify and assess the situation and to increase the scientific value of the research, we conducted a factor analysis. In particular, we assessed the impact of mineral fertilizer, pesticide prices and tariffs of agro-machinery services on the indicators of gross grape harvest and vineyard areas. For this purpose, we have calculated the correlation coefficients. The correlation coefficient indicates the nature of the relationship between the two factors and the degree of its closeness.

Within the factor analysis, we have included one more economic indicator. That is the average annual number of tractors, as there are no official indicators characterizing the level of mechanization in the RA agricultural sector. In our opinion, the change in the average annual number of tractors is an indicator that characterizes the level of mechanization and can act as a factor influencing the development of viticulture.

Thus, we have included the following economic indicators in the factor analysis:

- Gross grape harvest, thousand tons,
- Vineyard areas, hectares
- Average selling price of mineral fertilizers, AMD / kg,
- Average selling price of pesticides, AMD / kg
- Tariff of sprays against diseases and pests, liter / ha
- Tariff of soil cultivation, AMD / ha
- Average annual number of tractors.

The correlation coefficients are presented in Table 1. The statistical data that we used for correlation analysis is taken from the statistical Publications of the Statistical Committee of RA.

The correlation coefficients¹

		Gross grape harvest	Vineyard areas
Average selling price of mineral fertilizers	Pearson Correlation	.757**	.598**
	Sig. (2-tailed)	.000	.002
	N	24	24
Average selling price of pesticides	Pearson Correlation	.807**	.359
	Sig. (2-tailed)	.000	.085
	N	24	24
Tariff of sprays against diseases and pests	Pearson Correlation	.791**	.611**
	Sig. (2-tailed)	.000	.002
	N	24	24
Tariff of soil cultivation	Pearson Correlation	.743**	.497*
	Sig. (2-tailed)	.000	.013
	N	24	24
Average selling price of mineral fertilizers (previous year)	Pearson Correlation	.795**	.715**
	Sig. (2-tailed)	.000	.000
	N	23	23
Average selling price of pesticides (previous year)	Pearson Correlation	.892 ^{**}	.709**
	Sig. (2-tailed)	.000	.000
	N	23	23
Tariff of sprays against diseases and pests (previous year)	Pearson Correlation	.722**	.697**
	Sig. (2-tailed)	.000	.000
	N	23	23
Tariff of soil cultivation (previous year)	Pearson Correlation	.718**	.605**
	Sig. (2-tailed)	.000	.002
	N	23	23
Average annual number of tractors	Pearson Correlation	.702**	.165
	Sig. (2-tailed)	.000	.476
	N	21	21

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

¹ The calculations were made by the author, the source; Statistical Committee of Republic of Armenia, online databases;

[&]quot;Sown Areas of Agricultural Crops, Planting Area of Permanent Crops, Gross Harvest and Average Crop Capacity for 1993-2020"; <u>https://www.armstat.am/en/?nid=82</u>

[&]quot;Prices and Prices Indexes in the Republic of Armenia, 1997-2020"; <u>https://www.armstat.am/en/?nid=82&id=2284</u>

[&]quot;Availability and Good Working Order of Agricultural Machinery as of January 1, 1997-2017"; <u>https://www.armstat.am/en/?nid=82&id=2009</u>

In the correlation analysis, the coefficients were calculated not only by the values of the influencing factor and output index for the same year, but also by the value of the factor's previous year and output index for the given year. We took into account the fact, that the change of factors' indicators affects the output index not only in the given year, but also in next year.

For example, if the prices of agricultural products rise sharply this year, increasing the per unit cost of grapes, the farmer may stop cultivating grapes, reduce the area of the vineyard next year or simply not cultivate his vineyards. Therefore, the impact will reveal itself next year.

The values of the correlation coefficients speak about the fact that our assumption does not work in the case of the RA viticulture. That is, the correlation coefficients should have a negative sign and express inverse dependence. However, all the calculated coefficients have positive values, and are significant at the level of 0.01.

The obtained results show that the increase in the prices of production factors (mineral fertilizer, pesticides, etc.) and agro-machinery services has not yet led to the disruption of the development of the RA viticulture. That is, even in such conditions, when the prices of production factors are increasing and the selling prices of grapes are not growing steadily, farmers are still ready to engage in viticulture. That is, the critical point of the price increase has not been registered yet, from which the productive indicators of viticulture will start to decrease. This situation is somewhat logical, because without the use of agricultural tools, services and products it is impossible to run production properly. Therefore, the demand of these factors is not elastic to the changes in prices. In such a situation, we come to the conclusion that there are other, more significant, influential factors that impact the dynamics of the development of the RA viticulture not included in our study.

Scientific novelty: The important scientific value of this study is the revelation that production related factors have little impact on current dynamics of viticulture development, so we recommend carrying out other studies to reveal the predominant factors affecting viticulture of RA.

Taking into account the results of the research, we have developed the following recommendations:

- First, we propose to carry out a similar correlation analysis to find out the nature of the influence of market and political factors on the development of viticulture.
- Then, we propose to single out the factors that have had the greatest impact on viticulture and have conditioned the current rates of viticulture development.

We propose to develop an econometric-regression model, which will be a result of quantitative evaluation of the factors that have the most significant impact on the of viticulture development. The econometric model will make it possible to make scientifically sound and quantitative predictions about the development of viticulture. We suggest that the obtained results must be implemented for the scientific substantiation of the concepts and economic measures developed by the Government of the Republic of Armenia.

Conclusion: Within the framework of the research, it was revealed that the development of the RA viticulture is unstable, and the increase of the Gross grape harvest, in recent years was mainly conditioned by the increase of the average yield of grape. This is due to the fact that the used agricultural techniques and cultivation works have been improved over the years. The study assessed the factors influencing the dynamics of viticulture development. First, by taking into account the existing approaches in the scientific literature and combining them with our approaches, we grouped all these factors in three main groups.

- Market related,
- Production related,
- Political.

In particular a detailed reference was made to the production related factors and the nature of their impact on viticulture development. A correlation analysis was performed, as a result of which it was revealed that the Production related factors in the conditions of the RA do not have a significant impact on the development of viticulture. The observed dynamics are mostly due to the influence of the other, predominant factors. In other words, we believe that a comprehensive study should be conducted on the impact of market and political factors, as the current dynamics of viticulture development is in fact conditioned by these factors. The obtained results will allow pointing out the problems that exist in this sector and it will be possible to develop concepts for their solution.

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ՀՀ ԽԱՂՈՂԱԳՈՐԾՈՒԹՅԱՆ ՃՅՈՒՂԻ ՋԱՐԳԱՑՄԱՆ ԵՎ ԱՐՏԱԴՐԱԿԱՆ ԳՈՐԾՈՆՆԵՐԻ ՄԻՋԵՎ ԱՌԿԱ ԿՈՌԵԼՅԱՑԻՈՆ ԿԱՊՎԱԾՈՒԹՅԱՆ ԲՆՈՒՅԹԸ

Հովհաննես Սիմոնի Ասատրյան

Համառոտագիր. Հոդվածի հիմնական **նպատակն** է գնահատել արտադրական գործոնների ազդեցությունը ՀՀ խաղողագործության զարգացման վրա։ Հոդվածի շրջանակներում լուծվել են հետևյալ **խնդիրները**.

- ուսումնասիրվել է խաղողագործության ոլորտի արդյունքային ցուցանիշների դինամիկան,
- ուսումնասիրվել է արտադրության միջոցների շուկայի իրավիձակը և դրանց գների մակարդակը,
- գնահատվել են խաղողագործության զարգացման նախադրյալները և հնարավոր խոչընդոտները։

Թեմայի **արդիականությունը** կայանում է նրանում, որ ոլորտը բավականաչափ ուսումնասիրված չէ։ Չկա որևէ ուսումնասիրություն, որտեղ մանրամասն կերպով գնահատվել են վերոնշյալ խնդիրները։

Այս հետազոտության շրջանակներում կիրառվել են համեմատական, նկարագրական, տնտեսա-վիձակագրական, համեմատական-վերլուծական մեթոդներ։ Տնտեսամաթեմատիկական մեթոդի օգտագործմամբ՝ գնահատվել են ՀՀ-ում խաղողագործության զարգացման առանձնահատկությունները, վերլուծվել և ամփոփվել են ստացված արդյունքները։ Հետազոտության շրջանակներում մանրամասն անդրադարձ է կատարվել արտադրական գործոններին և խաղողագործության զարգացման վրա դրանց ազդեցության բնույթին։ Կատարվել է գործոնային վերլուծություն, որի արդյունքում պարզվել է, որ ՀՀ պայմաններում արտադրության հետ կապված գործոնները էական ազդեցություն չունեն խաղողագործության զարգացման վրա։ Խաղողագործության զարգացման առկա դինամիկան առավելապես պայմանավորված է այլ գործոնների ազդեցությամբ։

Հոդվածի **գիտական նորույթը** կայանում է նրանում, որ առաջարկվում է խաղողագործության զարգացման վրա ամենամեծ ազդեցությունը ունեցող գործոնների քանակական գնահատման արդյունքում մշակել էկոնոմետրիկ-ռեգրեսիոն մոդել։ Էկոնոմետրիկ մոդելը թույլ կտա խաղողագործության զարգացման վերաբերյալ գիտականորեն հիմնավորված և քանակական կանխատեսումներ կատարել։ Առաջարկում ենք, որ ստացված արդյունքները օգտագործվեն ՀՀ Կառավարության կողմից մշակվող հայեցակարգերի, տնտեսական միջոցառումների գիտական հիմնավորման ժամանակ և դրվեն այդ հայեցակարգերի և միջոցառումների մշակման հիմքում։

Բանալի բառեր. Խաղողագործություն, գործոնային վերլուծություն, արտադրական գործոններ, համախառն բերք, այգետարածք, խաղողագործության զարգացման դինամիկա, գյուղատնտեսություն։

ХАРАКТЕР КОРРЕЛЯЦИИ ФАКТОРОВ ПРОИЗВОДСТВА И РАЗВИТИЯ ВИНОГРАДАРСТВА АРМЕНИИ

Оганнес Сименович Асатрян

Аннотация: Основной **целью** данной статьи является оценка влияния производственных факторов на развитие виноградарства в Армении. Чтобы решить изучаемых в статье проблемы были поставлены следующие **задачи**:

- изучить динамика показателей продуктивности отрасли виноградарства,
- изучить рыночное положение средств производства и уровень их цен,
- оценить предпосылки развития виноградарства и возможные препятствия.

Актуальность темы заключается в том, что сфера недостаточно изучена. Нет ни одного исследования, в котором были бы подробно рассмотрены вышеупомянутые проблемы.

В исследовании использовались сравнительный, описательный, экономикостатистический, сравнительно-аналитический методы. С помощью экономикоматематического метода оценены особенности развития виноградарства в Республике Армения, проанализированы и обобщены результаты.

В рамках исследования подробно рассмотрены производственные факторы и характер их влияния на развитие виноградарства. Проведен факторный анализ, в результате которого установлено, что факторы, связанные с производством в условиях Республики Армения, не оказывают существенного влияния на развитие виноградарства. Современная динамика развития виноградарства во многом обусловлена влиянием других факторов.

Научная новизна статьи заключается в предложении создать эконометрический-регрессионную модель, которая будет являться результатом количественной оценки факторов, оказывающих наиболее существенное влияние на развитие виноградарства. Эконометрическая модель позволит делать научно обоснованные и количественные прогнозы развития виноградарства. Предлагаем использовать полученные результаты для научного обоснования концепций и экономических мероприятий, разработанных Правительством Республики Армения.

Ключевые слова: Виноградарство, факторный анализ, факторы производства, валовой продукт, площадь сада, динамика развития виноградарства, сельское хозяйство.

THE NATURE OF CORRELATION BETWEEN PRODUCTION FACTORS AND VITICULTURE DEVELOPMENT OF ARMENIA

Hovhannes Simon Asatryan

Annotation: The main purpose of this article is to assess the impact of production related factors on the development of the RA viticulture. Within the framework of the article were solved following **problems**.

- The dynamics of the productivity indicators of the viticulture sector has been studied.
- The situation in viticulture production means market and their price level were studied.
- The prerequisites for the development of viticulture and possible existing obstacles were discussed.

The relevance of the topic lays in the fact that the field is not sufficiently researched. There is no study that assesses the above mentioned issues.

In the scope of this research comparative, descriptive, economic-statistical, comparative-analytical methods were used and implemented. The peculiarities of viticulture development in RA were assessed using the economic-mathematical method; the obtained results were analyzed and summarized. A detailed reference was made to the production related factors and the nature of their impact on viticulture development. A correlation analysis was performed, as a result of which it was revealed that the Production related factors in the conditions of the RA do not have a significant impact on the development of viticulture. The observed dynamics are mostly due to the influence of the other, predominant factors.

The scientific novelty of the article is the proposal to create an econometricregression model, which will be a result of quantitative assessment of the factors that have the most significant impact on the viticulture development. The econometric model will make it possible to make scientifically sound and quantitative predictions about the development of viticulture. We suggest that the obtained results must be implemented for the scientific substantiation of the concepts and economic measures developed by the Government of the Republic of Armenia.

Keywords: Viticulture, factor analysis, production factors, Gross grape harvest, Vineyard areas, the dynamics of viticulture development, productivity, agriculture.